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The New England
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FRACTURE OF THE OS CALCIS

BY OTTO J. HERMANN, M.D.*

THE late Dr. David W. Cheever in his "Lectures in Surgery" (1894) states that the "Fracture of the Os Calcis is rare." To-day this is not so. In 1900, Dr. David D. Scannell of our Boston City Hospital estimated by means of a statistical study of the fractures in our hospital over a period of forty-two years that the fractures of this bone constituted 2% of all fractures. To-day it seems as if that percentage must be higher due to the marked increase in construction work.

STEP 1. Patient is turned on side opposite injury and sand bag placed under inner side of heel.

STEP 2. The tightly rolled towel is placed beneath the external malleolus and then with solid heavy blows the impaction is broken up and the piled up bone below the external malleolus is pounded down until the thumb can be easily placed in this region.

The os calcis is the largest of the tarsal bones. A large proportion of the body weight rests upon it. The fracture of this bone occurs most frequently in adult men whose occupation renders them liable to falls from a height of five to forty feet (practically an average of eight to twelve feet), and who land on the ground or other hard surfaces on their feet. The lesion, then, as a rule, is a result of a direct crushing force. The goodly frequency of its occurrence, the high rate of the incapacitated cases following haphazard treatment, and the fact that the fracture is almost always sustained by men who are in the construction game and who are economically dependent on efficient underpinning make this fracture a most important one to consider and to treat with due care.

STEP 3. The heel is quickly moulded and all motions, especially the lateral, are tested.

This fracture as generally agreed upon by various writers, presents about five types:

1. The avulsion type in which a bit of the os calcis is torn loose by the muscles of the calf and the tendo achillis.

*Hermann—Visiting Surgeon, Bone and Joint Service, Boston City Hospital. For record and address of author see "This Week's Issue", page 738.

2. A fracture of the sustentaculum tali.
3. A lateral crushing fracture due to a lateral blow or pressure.
4. Fracture of the anterior half which is usually comminuted.
5. Cases in which the heel is literally bitten off by mechanical devices such as escalators.
6. Compound fractures.

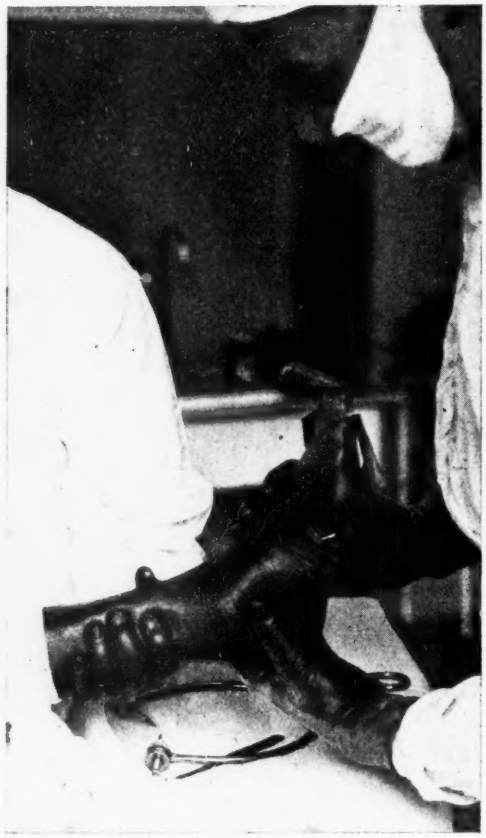
Most of these types are rare and scarcely worth noting for practical purposes. The most common type is that in which there is a rather formless comminution of the bone as a whole;

STEP 4. With scalpel, small incisions are made about 1 inch or so above the apex of the heel, the Arliss tongs are driven in, locked, and then lusty downward traction is made. This certainly pulls the heel down and gives us a good arch.

in these, the bone is broken through near a vertical plane, just in front of, or through, the posterior articular surface between the astragalus and os calcis. From this line of fracture there are usually other lines running backward more or less horizontally.

At the time of fracture the longitudinal arch gives way resulting in the traumatic flat foot. In brief the fracture results in:—

1. Forcing the heel up and out.
2. Flattening the sole of the foot with fragment pressure on the structures of the sole.
3. Heaping up of bone in contact, beneath, with the external malleolus.
4. Direct or indirect damage to the joints between the astragalus and os calcis (this either impairing or destroying the essen-



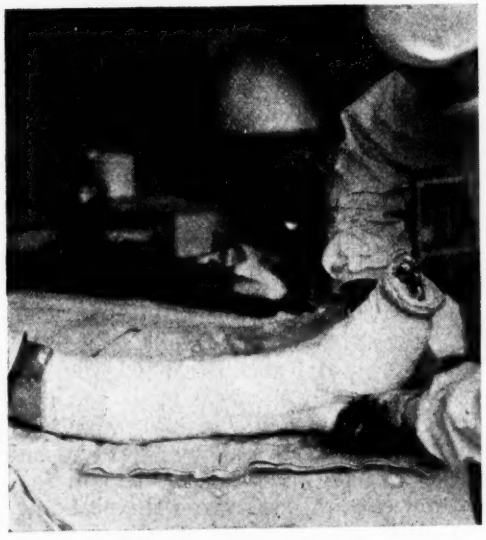
STEP 5. The heel is again moulded by the fingers and motions again tested. If necessary, I occasionally use the mallet again.

STEP 6. Tightly folded sterile dressings are placed over the two stab wounds in the heel and held in place by a sterile gauze strip wound about it.

tial motions of pronation and supination).

A brief review of the symptoms and the diagnostic points would seem in order at this point

STEP 7. A snug roll of thick felt 3 inches by 1 inch is placed horizontally beneath each malleolus.



STEP 8. A low plaster of Paris cast is then applied with foot somewhat inverted and in plantar flexion. While this is hardening, pressure is brought to bear over the pads.

before the main topic of the treatment is broached. The symptoms as a rule consist of:—

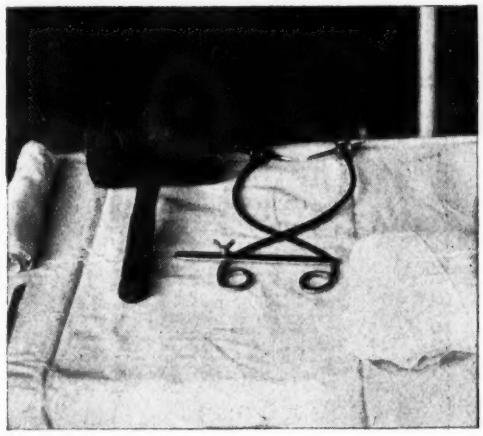
1. Inability to walk.
2. Marked loss of lateral motion of the foot with no loss of flexion and extension of the ankle joint proper.
3. Pain, swelling, and at times, crepitus.

Diagnosis:

In the diagnosis three features are very constant:—

1. A pushing up of the heel.
2. A broadening of the bone, chiefly outward. In other words, the bone plate of the outer surface of the bone forced out by spreading of the bone beneath it.
3. A decrease of lateral mobility.

The x-ray is useful chiefly in confirming the fracture and in showing the astragalo-os calcis joint condition, whether or not the fracture, simple or comminuted is into the joint. The degree of displacement also can be noted. The other irregular fissures or cracks and the pushing outward of the compact plate on the outer side are not so important.



The operating kit: A rolled sterile towel, a weighted eight-pound wooden mallet, tongs, scalpel, a sterile covered sand bag (not shown in picture), sterile dressing, two rolled pieces of thick felt, 3 inches by 1 inch, sheet wadding and plaster of Paris bandages.

Previous to 1908 there was but little said or done in regard to treatment. At that time the fractures of the os calcis were immobilized in plantar flexion without any attempt to reduce impaction, correct displacement or increase lateral movement. The fracture as such, healed with no difficulty but the foot was almost always either partially or totally crippled, depending on the amount of the original displacement and the severity of the fracture.

It was not until a few years previous to 1908 that any real sustained attempt was made to evolve an efficient method of treating the fracture of the os calcis. The results from the usual methods of treatment had been bad. They ranged from permanent partial disability, to absolute disability as far as the foot was concerned. In 1908, Dr. Frederic J. Cotton, and the late Dr. Louis Wilson, both of the Boston City Hospital Surgical Staff, emphasized for the first time that, though admirable articles had been written on the subject of this fracture,

no one seemed to offer anything for the recognition and proper treatment of fresh cases. These two men after five years of work finally adopted the following routine:—

"Ether anaesthesia. Breaking up of impaction (with hands or with spindle inserted beneath the heel cord). Correction of upward or lateral displacement. Securing of adequate motion between the os calcis and astragalus by forced pro and supination of the foot. Re-impaction with sandbag and mallet or by manual pressure."

"In the after-care, a plaster of Paris cast equipped with two felt pads, one over the tendo achillis, one over the dorsum of the foot, were used. After the plaster was on, the foot was put up at fifteen to twenty degrees plantar flexion, and during the setting of the plaster, downward traction was made with the hands in the dorsum of the foot, and behind, at either side, of the tendo achillis. With this, some inversion was secured. At the end of ten days the cast was removed and massage and guarded active motion was begun. No weight bearing was allowed for a month. The return of function was slow."

That then was the treatment Drs. Cotton and Wilson devised in 1908. Down through the years since then, this conservative method of handling the fractured os calcis has been used, more or less, at our hospital. It is only within recent years that several important changes have been made. Some time in 1920,—I believe it was in May,—I was at work in one of the operating rooms of our hospital, pounding and moulding one of these cases and then instead of pulling down the heel by means of a sound inserted beneath the tendo achillis (as per F. J. Cotton) I used the regular tongs (in this instance the Edmonton Type) for traction. At this point Dr. Cotton strolled in and I then suggested leaving in the tongs so as to maintain traction by means of them, a Thomas splint, and the usual tourniquet traction. I thought the heel could be brought and kept down much better. This was done. Tong traction was left on for two weeks and then the tongs were removed and the regular plaster casts were applied. The procedure was followed in about nine other cases and it worked well with the exception of one case. In this instance there was some sloughing about the tong points and also some localized osteomyelitis. This cleared up and did no permanent damage. It simply lengthened the convalescence.

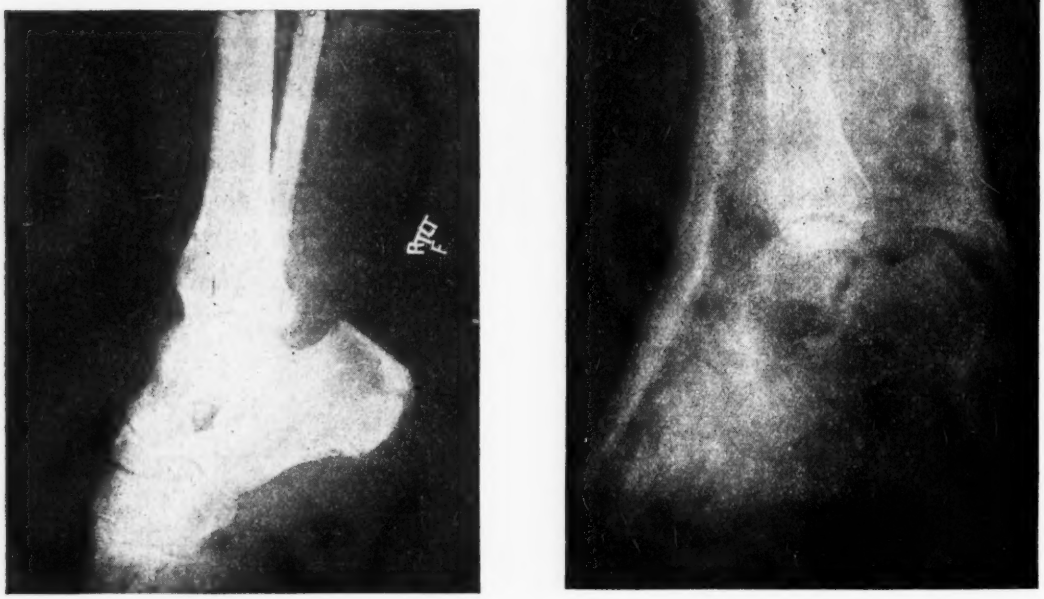
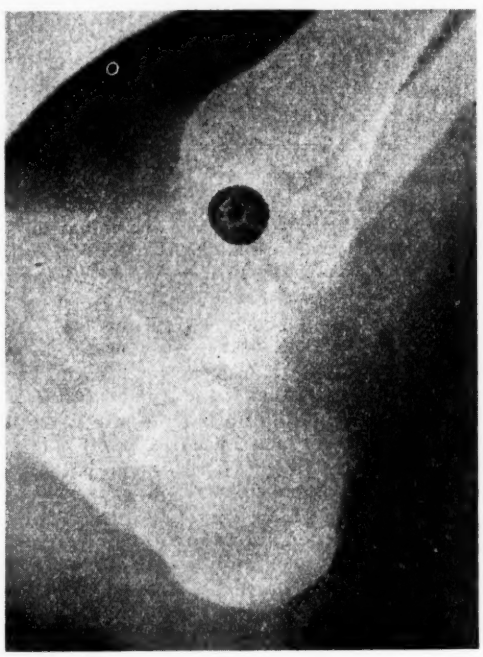


Figure without cast shows conditions before reduction and the one with cast after moulding in the case illustrated.

Naturally such a complication was not pleasant. The use of the tongs traction was continued but only on the operating table. The two weeks of tongs traction were discontinued. The Thomas splint was also discarded for the initial splinting and a return was made to the plaster cast. So by gradual steps the standardized method, which I am following at present, was evolved. I have used this method in the forty cases that came to me during the past few years by courtesy of our Hospital Surgical Assignment Committee.

Before proceeding with the description of this method of therapeutic procedure, I might mention the operating kit which consists of a rolled sterile towel, a sterile covered sandbag, an eight pound weighted wooden mallet, a pair of tongs (Iris Bone tongs), a scalpel, sterile

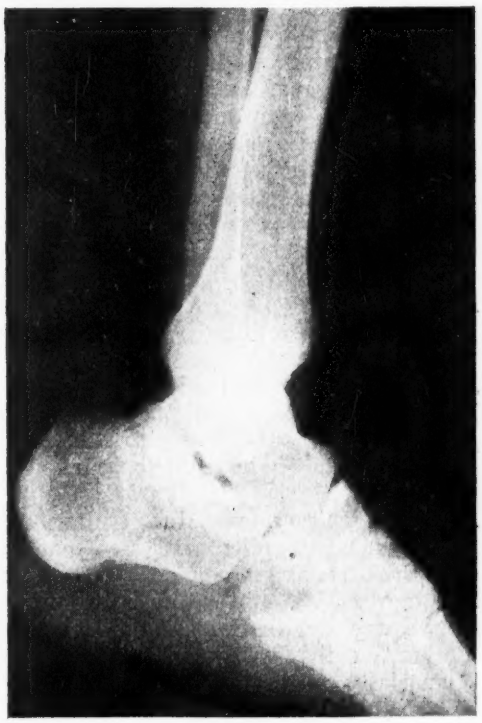
B. Poor end result. Comminuted fracture into joint. Pain through upper dorsum of foot through astragalo-os calcis joint. Lateral motion locked.



H. Five months' disability. Good end result. (Done under spinal anaesthesia because of tuberculosis.) Has heel with excellent contour, motions and no pain.

dressing, two rolled pieces of thick felt (3″ by 1″), sheet wadding and plaster of Paris bandages.

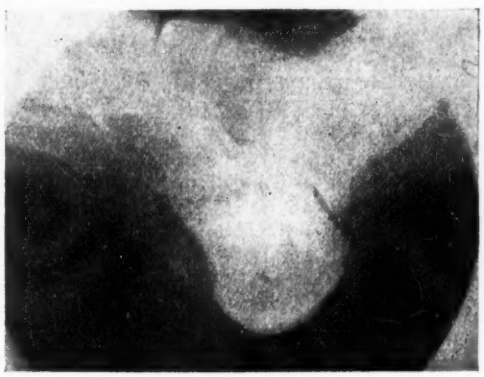
Then in regard to the pre-operative preparation of the heel:—the usual "two-day bone prep" is done. The type of anaesthesia might be mentioned here—it is gas—ether, or spinal.



St. P. Persistent pain through astragalo-os calcis joint. Clinically good looking heel. Lateral motion locked. Has probably incomplete arthrodesed ankle. Should have arthrodesis. Been seen by quite a few surgeons and none have come out flat-footed for arthritis.

Now as to the method itself:—

1. Patient is turned on side opposite injury and sandbag placed under inner side of heel.
2. The tightly rolled towel is placed beneath the external malleolus and then with solid heavy blows the impaction is broken



T. Six months' disability. Good end result even though it was moulded one month after injury.

up and the piled up bone below the external malleolus is pounded down until the thumb can be easily placed in this region.

3. The heel is quickly moulded and all motions, especially the lateral are tested.
4. With scalpel, small incisions are made about 1″ or so above the apex of the heel,

the Iris tongs are driven in, locked and then lusty downward traction is made. This certainly pulls the heel down and gives us a good arch.

5. The heel is again moulded by the fingers and motions again tested. If necessary, I occasionally use the mallet again.
6. Tightly folded sterile dressings are placed over the two stab wounds in the heel and held in place by a sterile gauze strip wound about it.
7. A snug roll of thick felt (3″by1″) is placed horizontally beneath each malleolus.
8. A low plaster of Paris cast is then applied with foot somewhat inverted and in plantar flexion. While this is hardening, pressure is brought to bear over the pads.
9. This cast is removed in ten days and a new one is applied with new pads and with foot at right angle.
10. A new cast is applied every ten days or two weeks with renewed padding up to about eight weeks. Then we apply specially contrived pads on a steel frame, having the pressure pads* controlled by small turn buckles. This is followed in two weeks by a shoe that has these bars inserted in the heel with the turn buckles attached to them.
11. Massage and motion are instituted from about the eighth week.
12. Weight bearing and exercise are begun at the end of the twelfth week.

*Devised by our former internes, Drs. Briggs and McIntyre, in conjunction with our orthopedic mechanic, Mr. Rogerson.

From the third to the fifth months the patient needs well supervised physiotherapy (baking, massage and exercise), and needs to be constantly cautioned against the overuse of the foot. I have found that the constant pressure beneath both malleoli has in most instances taken care of that painful "piling up" of excess bone beneath the external malleolus.

At the beginning of the walking period a greater comfort in many cases can be had from raising the inner sole and heel (¼″ or so), and from wearing a well fitted inner leather sole with pocket for felt pads. Also that during the fourth and fifth months is the time to judge whether the conservative method alone will suffice. If, despite all precautions, the piling up beneath the external malleolus increases, then Dr. Cotton's "scoop operation" should be done. If we find that there is persistent joint pain, then a sub-astragaloid arthrodesis is done.

As stated previously, I have used this method in a series of forty cases. In order to give a comprehensive résumé of these cases I have mapped out the following table which shows the etiology, the disability time, and a few remarks on the end results. These results I have divided into "good" and "poor" classes. Those having persistent pain either below the external malleolus, over or through the astragalo-joint region, badly locked lateral motion, or any other condition which prevented the patient returning to work have been marked "poor results".

Name Initials	Etiology	To Work	Remarks
V. B.	Left Os Calcis Fell 5 feet from window	4 mos.	No pain tenderness or visible deformity. Motions good. *Good result.*
J. C.	Right Os Calcis Fell 15 feet from building	9 mos.	Lateral motion present. No joint pain. Foot normal. *Good result.*
W. C.	Left Os Calcis Fell 12 feet from staging	4 mos.	Motions good. No piling up. Walks without pain. *Good result.*
A. Co. (Woman)	Left Os Calcis Fell 5 stone steps	6 mos.	Limited lateral motion. Pain present only when tired. *Poor result.*
R. C.	Right Os Calcis Fell 8 feet from staging	20 mos.	Some piling up but no painful impingement against malleolus. *Poor result.*
M. C.	Both Os Calces Fell 12 feet from staging	12 mos.	Piling up in right. Some pain in left. Motions normal. *Good result.*
A. C. (Woman)	Right Os Calcis Fell off step	8 mos.	Piling up. Occasional pain. Some limitation lateral motion. *Poor result.*
R. O'B.	Fell from staging 10 feet	2 mos.	One of my first cases. No pain. Motions normal. No heel broadening. Arches good. *Good result.*
R. C.	Left Os Calcis Jumped 4 feet	5 mos.	Motions good. Occasional slight pain. Walks well. *Good result.*
J. D.	Right Os Calcis Fell 5 feet from staging	18 mos.	This is one of those displaced comminuted fractures into the joint. Persistent pain. Locked lateral motion. *Poor result.*
T. D.	Right Os Calcis Fell down elevator well 12 feet	6 mos.	No piling up. Motions normal. Walks well. *Good result.*
T. F.	Right Os Calcis Fell off curbstone	2½ mos.	Has some piling up and also slight flattening but uses foot 10-14 hours a day without discomfort. *Good result.*

Name Initials	Etiology	To Work	Remarks
P. F.	Right Os Calcis Fell off fence 4 feet	2½ mos.	*Good result.*
W. F.	Left Os Calcis	9 mos.	Pain below external malleolus persisted some time but disappeared. Walks with comfort. *Good result.*
M. F.	Right Os Calcis Fell 35 feet from third story building	7 mos.	Motions good. No piling up. No pain. *Good result.*
P. G.	Left Os Calcis Fell down elevator well 6 feet	6 mos.	Excellent contour of foot. Motions good, no pain. *Good result.*
M. F.	Right Os Calcis Fell 35 feet from third story building	7 mos.	Motions good. No piling up. No pain. *Good result.*
G. H.	Left Os Calcis Fell 15 feet from ladder	8 mos.	Practically a normal looking heel. *Good result.*
H. J.	Left Os Calcis Fell 12 feet from ladder	5 mos.	Using foot without pain. *Good result.*
C. H.	Left Os Calcis Jumped 5 feet from stone wall	4½ mos.	Motions good. No piling up. No pain. *Good result.*
G. H.	Left Os Calcis Fell from truck onto street	6 mos.	Only complaint is some stiffness at night after day's work. *Good result.*
J. He.	Right Os Calcis Struck by auto	2½ mos.	Practically normal. *Good result.*
K. Jo.	Left Os Calcis Fell off step-ladder 4 feet	5 mos.	Practically normal. *Good result.*
K. J.	Right Os Calcis Fell from staging 6 feet	2 mos.	Working nine hours a day. No pain. Perfect comfort. *Good result.*
McC. C.	Right Os Calcis Fell 10 feet	24 mos.	Restricted lateral motion. Walks all right but has more or less persistent pain beneath the malleoli. *Poor result.*
McG. M.	Left Os Calcis Fell from staging (20 feet)	6 mos.	Locked lateral motion. Tires easily. Has intermittent pain. *Poor result.*
McG. T.	Right Os Calcis Fell 8 feet	6 mos.	Walks well, no piling up. No pain. *Good result.*
McL. Ja.	Bi-lateral Os Calcis Fell 30 feet	12 mos.	Crippling arthritic complications. Excessive piling up. Pain below external malleolus. *Poor result.*
McN. D. J.	Right Os Calcis Fell 8 feet to barge deck	5 mos.	No piling up. Motions good. No pain. *Good result.*
M. T.	Right Os Calcis Fell 2 stories (30 feet)	5 mos.	Remarkable that heel was not badly fractured. Motions good. No pain. *Good result.*
C'B. R.	Left Os Calcis Fell from staging 5 feet	2½ mos.	Practically normal. *Good result.*
R. Jo.	Left Os Calcis Fell 15 feet	8 mos.	Foot stiff. Pain in region of astragalo-os calcis joint. At work but with great discomfort. *Poor result.*
St. J.	Right Os Calcis Fell 8 feet from elevated platform	6 mos.	No pain. No locking or piling up. *Good result.*
St. S.	Left Os Calcis Fell from safe seven feet	18 mos.	Persistent pain through joint area. *Poor result.*
S. M.	Right Os Calcis Fell 2 feet	4 mos.	Practically normal heel. *Good result.*
S. L. (Woman)	Right Os Calcis Fell 5 feet down elevator well	18 mos.	Good result but only after protracted convalescence. *Good result.*
S. C.	Left Os Calcis Fell from ladder 8 feet	10 mos.	Some "piling up." It interferes slightly with lateral motion. *Good result.*
T. W.	Left Os Calcis Fell from second story 20 feet	6 mos.	Good result even when method used four weeks after injury. *Good result.*
W. C.	Right Os Calcis Fell from staging (10 feet)	5 mos.	No piling up. Motions good. *Good result.*
W. J.	Left Os Calcis Fell from step-ladder (4 feet)	2 mos.	Practically normal. *Good result.*
Z. H.	Left Os Calcis and Femur Fell 12 feet	7½ mos.	Only occasional stiffness. *Good result.*

This table shows us that the average distance of the fall is about eight to twelve feet (from one to thirty feet are the limits in our series). Including the "poor results", we find that there is a flat average period of disability of 7.4 months: if these are excluded we see that the "good results" show an average incapacitating period of 6.2 months. This period might be shaved down somewhat if the compensation complex could be eliminated. We find that this "conservative" method has given us 22.5% poor results, and 77.5% good results.

In looking over the poor results I discovered that they were generally comminuted fractures of the os calcis into the astragalo-os calcis joint, and with displacement. These should be helped by a sub-astragaloid arthrodesis. In the few cases where there is pain which is believed due to the impingement of excess bone against the external malleolus, Dr. Cotton's "scoop" operation will remedy the condition. It should be noted that there was no trouble from flattened arches, from "spur" formation, or from painful broad heels.

In conclusion, therefore, I would state that this conservative construction pounding, extension, moulding method originally brought forth by Dr. F. J. Cotton and Dr. Louis Wilson, and modified by me (especially in the after-care) can be used safely in all cases of fractures of the os calcis. In 20-25% of the cases this method alone would not suffice; it would have to have some type of sub-astragaloid arthrodesis (preferably, that devised by Dr. Philip Wilson of the Massachusetts General Hospital) used with it. These cases, as just stated are, as a rule, those in which there is a fracture, single or comminuted, with the astragalo-os calcis joint and with displacement. Such cases can either have the conservative method tried first and then, if needed, arthrodesed later; or the two methods combined can be used at the outset. The latter procedure in such cases is seemingly the preferable one. In the other 75% to 80% of cases I feel certain that it alone would suffice. The method is simple and constructive. It does not require any special degree of skill if the steps are carefully followed. It does require meticulous care in the convalescence. I do believe that the continued localizing pressure upon the os calcis immediately below the external malleolus, does manage in the great majority of the cases, to restrain to a great degree that "piling up" of excess bone in this region, and thus it does not allow the "lateral locking" or the pain arising from the impingement of this redundant bone against the external malleolus.

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3 D. S. Cunningham: Anatomy, 1905—William Wood and Company, N. Y.
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6 Cotton and Wilson: Boston Medical and Surgical Journal, 1908, CLIX, 554.
7 Wilson, P. D.: Journal of Industrial Hygiene, July, 1922, Vol. 106-124.
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Excerpt from a letter from the patient shown in the above series of pictures.

"I have returned to my old business and have put the fractured foot to what I believe is the most severe test that could be tried, and that is packing wool in bags for eight hours at one stretch, without any pain or lameness afterwards. The foot is even better than it ever was."

THE RELATION OF CONSTITUTIONAL INADEQUACY TO ATROPHIC ARTHRITIS

BY MILLARD SMITH, M.D.*

THE constitutional aspects of arthritic diseases are commonly ignored in dissertations upon the subject, and even when they are mentioned, they do not receive the attention that they properly deserve. The tendency of this group of diseases to cause more spectacular lesions in the joints, from the symptomatic and objective points of view, has had the unfortunate effect of diverting the attention of students from aspects of the disease which are of fundamental importance in its eventual solution. When the general manifestations of arthritic disease occur in the absence of joint involvement, they are apt to have ascribed to them a diagnosis which in no way implies the understanding that they are part and parcel of the same underlying process responsible for the full-blown picture known as arthritis.

The above remarks will not apply, fortunately, to the field of that specific form of arthritis, designated "acute rheumatic fever". Thanks to the intensive interest and investigations of Homer Swift, as well as his correlation of the works of others, we are coming to accept the doctrine that acute rheumatic fever is a constitutional disease, involving objectively, at one time, the heart; at another, the brain; and at still another time the joints. In fact, the pathology is not even limited to these specialized structures; the disease causes vascular reactions, and these may occur wherever blood vessels are found.

We continue today, however, to think of atrophic arthritis as a disease peculiarly affect-

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ing the joints; and because we still view it in these terms, we persist in attempts at finding the specific bacterium which has the power to lodge within the joint structures and cause the lesions typical of this condition. Charcot, Garrod, Jones, Goldthwait, Pemberton, and others have pointed out in the past the constitutional characteristics of the disease, but this angle of approach is ignored largely in present-day literature. Moreover, studies of the pathology of the joints[1, 2] have thrown grave doubt upon the idea that the lesions are caused by the local action of a specific organism. A theory which predicates the local action of an organism must at the same time predicate a distribution of this organism to every tissue of the body, because an open-minded although cursory clinical study of the disease will soon convince one of its widespread effects.

It is the purpose of this paper to present a composite picture of the development of the disease, and to follow its evolution in its significant details. It is not to be inferred that every patient shows all of the stages presented in this picture, but it is possible to pick up the thread of continuity in every patient at some period of the disease. Some patients show a rapid progression so that certain stages become indistinct, and the forerunners are lost in the violence of the onset. But fortunately, many patients preserve the details of progression as a slow-motion moving picture detects for the eye instantaneous motions, and it is from this group of patients that the true story of the disease can be learned.

Atrophic arthritis is distinctly an acquired condition, but its roots appear in many instances to permeate back into the forebears. A pronounced familial history may be obtained in from twenty to fifty per cent. of individuals so afflicted, depending upon the size of the series of cases and the type of subject studied. The disease occurs characteristically in the asthenic type of individual, although it appears also in asthenic subjects. The familial tendency is greater in the former. But it is not the anthropological type that necessarily determines predilection, and for this reason it is necessary to search for other determining factors which are common to both types of individual. However, these factors can be studied best in the prototype of the syndrome, the asthenic, and so only this type will be considered in this paper.

A vivid picture of the physiologic foundation upon which atrophic arthritis grows has been described by Comby and quoted in full by Pende[3] under the term "infantile arthritism".

He says:

> "His (the 'little arthritic's') skin is soft, fine and white, and transparent enough to allow the venous network to show through. He perspires readily, sometimes profusely and all over. . . . Viewed from the angle of the circulatory apparatus, they generally have a rapid, unstable pulse and an irritable heart, especially when they approach puberty.
>
> "These children are emotional, they grow pale or blush readily and are subject to fainting fits. . . .
>
> "In some cases we observe the alternation of eruptions of urticaria or eczema with crises of dyspnea. . . .
>
> "Digestive disturbances are of paramount importance. . . . All varieties of dyspepsia are frequent, especially atonic flatulent dyspepsia with abdominal distention and eructations. . . . Constipation is habitual, sometimes obstinate, predisposing to mucous and mucomembranous enteritis, which is often complicated with appendicitis. . . .
>
> "The more obvious phenomena are those of the skin, which is delicate and irritable, reacting to even the slightest traumatic stimulus with localized swelling or an erythematous papule. Under the influence of heat, and even more under that of wind and cold, the cheeks redden and the skin may chap. These children are readily subject to chilblains. In summer they perspire profusely and suffer at times from prickly heat, seasonal erythemas and hyperidrosis of hands and feet. Urticaria is quite common, and with it may appear all the various vasosecretory symptoms which we include today under the head of Quincke's disease: angioneurotic edema of the face, larynx, backs of hands, joints, meninges. . . . Frequent also are the various rheumatic inflammations of the joints, . . . the muscles, . . . and the bones, unaccompanied by fever.
>
> "As a rule, these exudative children show great thermic imbalance, instability of body weight, a tendency to edema and to accumulation of water and salt in the tissues. . . .
>
> "All this complexity of phenomena of the exudative diathesis is often complemented by a train of nervous disorders both in the sphere of the vegetative nervous system and in that of the life of relation.
>
> "Neuro-vegetative disorders consist mainly, if not exclusively, of vagal and parasympathetic hypertonia. This consists of an exaggerated oculo-cardiac reflex, respiratory arhythmia, bradycardia, hyperperistaltic phenomena, localized spasms in the stomach, intestine, bladder and uterus, mucous hypersecretion of the colon, bronchial and laryngeal spasm, etc.
>
> "Finally, it is not unusual to observe in these little arthritics spasmophilic and tetanoid phenomena of the striated muscles, hyperreflexism, tremors, choreiform twitching, jactitation, pavor nocturnus, subjective anxiety and epileptoid attacks."

One common characteristic of the atrophic arthritic constitution which the author has noted frequently is that of an easy fatiguability of the nervous and muscular systems. Under emotional stress those young subjects predisposed to the

disease become irritable, unstable and inefficient. They do not excel in competitive physical sports which require an expenditure of unusual amounts of energy for any length of time such as swimming or running.

On the other hand, they react quickly and seem to be able to expend efficiently a large amount of energy (both nervous and physical) for a short period.

Many of the characteristic symptoms and signs which have been noted above are not considered to be abnormal by the individual or his associates. They appear to be a part of his personality and while they may limit his activities in certain directions, do not subjectively inconvenience him in his contacts with the environment. His "arthritic constitution" seems to make him a desirable member of society, because he has learned to cover up and compensate unconsciously for his deficiencies, because he is agreeable, and because he seems to be gifted with an unusual amount of energy.

Our young subject who is being described cannot be considered as abnormal or pathologic, because he is seen so commonly and forms such an important part of society. Rather, we are more likely to think of him as hypernormal, in that he presents a picture of hyperactivity; he is hyper-reactive, and he expends energy too freely commensurate with his resources; yet he recuperates rapidly at first.

He is plunged into the responsibilities of school with its many contacts and points of stimuli. He may begin to break at an early stage of existence, because he continues to react as strongly as he did before he had responsibilities thrown upon him. His inherent will-power compels his physique to continue at tasks even when his nervous and physical mechanism rebels. His reactive constitution may become a handicap to a neuro-muscular apparatus already at a disadvantage. The studies of Seham[4] demonstrate that this is not a fantastic picture, being painted as an appropriate prologue to the drama of arthritis. They demonstrate also that the child not disposed by inheritance to this syndrome may develop similar tendencies in the absence of a careful control of his reactions to his environment.

During the school period, acute infections are contracted to stimulate further the reactability of the individual, and the more reactive he is, the greater toll they will take. The author will try to show in a later paper how the acute infections may contribute specifically to atrophic arthritis, but for the present we need consider only the general exhaustive effect upon the neuro-muscular and circulatory reserve. The adult shows this much better than the child because convalescence is far more rapid in the latter. However, the total expenditure of physiologic energy is probably greater in the child because he is more reactive. The imbalanced neuro-vascular states seen so frequently following acute infections in the adult need only be recalled to emphasize the adjustment that the child must make to return so rapidly to an apparent normal state of activity.

Despite the enormous expenditure of physical and nervous energy which the child is constantly making, he may reach the age incidence of atrophic arthritis without as yet subjectively sensing that he has the arthritic handicap. Nevertheless, the expenditure has been made and a reserve has been partly drained to increase his physiologic liabilities.

Should his fortune be good and his future contacts and responsibilities be light, he may continue for years without becoming conscious of an inherent physiologic insufficiency, but should he become plunged into the vicissitudes and necessities of a struggle for existence, the outcome may be vastly different. He has carried his reactive nature through his years of sheltered home life, and it has become more reactive rather than less during his years of contact with the world in preparation for his independent struggle for existence.

A differentiation in environmental factors which tend to exhaust or deplete the constitution begins to appear at this stage of life with respect to the sexes. The so-called "normal" process of reproduction in the female may begin to take its toll of nervous and physical energy. Modern civilization has reared so many customs and habits to lift man from the animal stage that reproduction and rearing of young are no longer attended with minor consequences as far as physical and nervous depletion is concerned. Repeated pregnancies predispose to the arthritic process, and exacerbate it once it is present. The female no sooner is relieved of responsibility of procreation than she is plunged into the transitional period of the menopause, which is associated with a disequilibrium of the neuro-vascular systems. The menopause also disposes to the arthritic state.

On the other hand, the male is shouldered with the responsibilities of providing an existence for himself and dependents. If he is to succeed, and providing his success depends entirely upon his own efforts, the expenditure of nervous and physical energy as a consequence is associated with a very definite amount of depletion.

Neither is the adult free from the possibility of infections of both acute and chronic types, and these tend to deplete as they do in childhood. Infection in the adult is perhaps of more importance from this standpoint than in the child because the former is apt to have less reserve and less recuperative powers.

The crux of the situation rests upon how much attention is given by the individual to repletion. Should the individual so direct his life that he allows sufficient time for physical and mental rest and relaxation, he may be able to preserve a reserve which will allow him to bridge successfully times of stress. The period of bed rest following even such simple acute infections

as grippe, which the physician has been taught to prescribe as a matter of routine, has an important bearing upon this subject. But the individual disposed constitutionally to atrophic arthritic disease is the very one who is less apt to take such precautions because his highly reactive nature runs out of the bounds set by his physical abilities; he is apt to force himself beyond his ability to endure physically and nervously.

At some time, then, within the age incidence of atrophic arthritic disease the disposed subject begins consciously to notice that something is wrong. He is becoming more nervous and irritable; he has difficulty in getting to sleep; he sleeps fitfully and he awakes in the morning as tired as when he went to bed, or he may find that sleep is not so refreshing as it formerly was. He does not feel so strong as he formerly did, and he becomes exhausted more easily. If he runs up a flight of stairs or for the street car, he breaks out in perspiration and becomes abnormally dyspneic and is very conscious of palpitation of the heart. If he becomes introspective, he will find that his heart is rapid most of the time, even though he may be sitting quietly. Slight emotional stimuli produce more pronounced physical reactions than formerly.

He may notice that his hands and feet perspire freely, and it seems odd to him that even though they may perspire, they are cold. When his friends shake hands with him, they have a momentary shock because his hands are cold and clammy.

If he has not been troubled with constipation before, it is very apt to assail him now. He begins the laxative habit, and he complains of gas in the stomach. His appetite becomes capricious; it is excellent on some occasions and at other times he is too tired to eat. He may begin to lose weight.

His friends may notice that he is becoming anaemic, because his skin is becoming ischemic. With this change he notices subjectively that he has to wear more clothing and use more bed clothing than formerly to keep warm.

His finger nails may begin to change their consistency and become more brittle. Likewise, he may have difficulty with falling hair. Even his skin may change and become atrophic at this stage.

If he is very observing, he will notice that changes in the weather are associated with increased fatigue and loss of appetite.

Something is very definitely wrong, and he consults his physician. Very little can be found objectively on physical examination. His systolic blood pressure may be low and the diastolic pressure relatively high. He may be under weight. His pulse will be rapid, and he may even have a slight afternoon temperature. He appears asthenic. Possibly a diagnosis of incipient tuberculosis will be made; oftentimes the diagnosis of psychoneurosis is finally resorted to when x-rays of the chest and examination of the lungs disclose no evidence of tuberculosis. He will be given instructions to take a vacation and rest, live out-of-doors and force food. If he follows these instructions, he will recuperate for a while and come back to work improved. But he goes back to his usual habits which favor physiologic depletion. Perhaps an acute infection overtakes him and he has great difficulty in recuperating, or he may begin having definite signs of atrophic arthritis at this time.

It may be that he does not go to the physician, that he does not have the acute infection; he struggles on as he has been doing for years. He begins to notice that when the weather is cold, he has muscle stiffness; or, if a draught blows upon an extremity, he develops an aching joint. There is nothing to see on examination; moving the part does not increase the aching, and keeping it quiet does not help it immediately. If he keeps it warm, the aching will go away. Cold draughts may stiffen his muscles. He may begin to notice frequent muscle cramps if he keeps his extremities in one position for a length of time. Some of his joints may begin to creak on motion.

He develops, especially when the extremity is exposed to cold or when he grasps an object tightly for a length of time, curious tingling and numb sensations, often involving only one finger or toe. He is apt to notice a generalized cutaneous hyperesthesia. Occasionally it happens that the atrophic arthritic subject becomes surprised with an inability to loosen his grip after he has been grasping something for a period of time.

He may wake up some morning, step on the floor, and find that his heels or the area under the anterior arch is sore. As he walks around this soreness disappears, but it tends to recur every morning. He consults his doctor for foot strain and is given arch supports because there is no evidence of arthritis. But the arch supports fail to relieve the symptom; he continues to have the soreness. Perhaps it may go away after a week or two; or, it may persist and not be relieved by exercise. It may become very difficult for him to keep up his work because of sore feet. A period of complete rest off his feet will relieve him.

All this time he continues to lose weight and his appetite is becoming smaller. Likewise, he is getting more and more nervous and irritable, and more fatigued. He begins to have persistent aching in his joints and bones, sometimes so painful that it keeps him awake at night. But there is nothing as yet to see on inspection. Finally, as this aching becomes more persistent, the joints begin to swell, and then he awakes to the possibility that he has arthritis.

A physician is consulted, and likely all possible foci of infection are removed. Sometimes

this procedure so upsets the patient that his arthritis becomes much worse; usually it is not relieved. Not infrequently no foci of infection are found. He is "medicated" with salicylates; these help him only temporarily, but upset his already irritable stomach. His arthritis progresses unless he is given the thing he needs the most, and that is mental and physical rest, and even in spite of rest, it has a tendency, when once started, to run in remissions and relapses. The reason is evident; he is suffering from a disease of many years' duration, and the cause cannot be removed in a week or a month.

Should etiologic factors which deplete profoundly arise, the picture given above may occur over a very short period of time. But the disease is the same whether its onset is insidious or subacute. The characteristic train of events remains the same. It is not like primary inflammatory forms of arthritis, because the latter begin with swelling, then fever, followed by stiffness and finally pain on motion. The atrophic arthritic may have pain whether he moves or not, and for considerable periods of time before joint signs appear.

Atrophic arthritis presents a triad of symptomatology which is related to the neural, vascular and muscular systems. The initial joint lesions are produced by abnormal vascular reactions. The neurological manifestations are related to the autonomic system, and chiefly to its sympathetic division. The muscular signs and symptoms are referable, possibly, to both the vascular and neurological systems. At any rate, a study of specific etiologic factors must include an investigation of the action of these factors on these three systems. *Atrophic arthritis is not a local joint disease; it is a generalized disease and has something to do with heredity, the constitution, and the reaction of the individual to his environment.* It is typically not an acute condition in the nature of its onset, although it can be seen that rapid physiologic depletion might account for some of the subacute cases which are not infrequently seen. Finally, it might be called a disease of reflex nature, because it represents the result of continued expenditure of energy on the part of the subject in his reactions to his environment.

A study of the patient's joints will avail little, but a study of the patient will result in a better understanding of the disease than exists today. This condition accounts for an enormous economic loss because it is so prevalent, and because it sometimes begins to take its toll long before arthritic signs appear. It presents one of the most fruitful fields for preventive medicine, and it can be seen that this field extends back into even the preschool age. The early signs of the condition should be considered with apprehension equal to that with which we have learned to regard the signs of incipient tuberculosis. It is a preventable disease, and its prevention depends upon education of both the public and the medical profession.

SUMMARY

I have tried to show that atrophic arthritis does not begin when joint signs appear. It is a disease with antecedents often of many years' duration, which can be traced back to childhood in many instances. They either produce the constitutional reactions necessary for its production in those not disposed to the disease, or else they aggravate these constitutional characteristics already present in those who are predisposed from birth. These constitutional reactions which are necessary to the production of atrophic arthritis are referable to the neural, vascular and muscular systems.

The nature of the disease and its causative factors are such that it is preventable. Prevention will depend upon a better understanding of the disease on the part of both the public and the medical profession. To this end, this paper is presented.

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DIPHTHERIA PREVENTION IN BROOKLINE

BY FRANCIS P. DENNY, M.D.*

IN 1923 Brookline had an estimated population of 40,400 with 7,200 children under 15 years of age. About 4,800 of these children attended the public and parochial schools. Since 1905 the average number of cases of diphtheria reported yearly had been 52, and the deaths averaged 2.2.

PREVENTIVE WORK IN THE SCHOOLS

In 1923 a circular letter of information in regard to the Schick test and toxin-antitoxin, with consent slip attached, was given to each pupil in the public and parochial schools below the high school grades to be taken home to their parents. All children whose parents consented were Schicked and if found susceptible three T-AT doses at weekly intervals were given. The work in the public schools was done by Dr. David A. Hassman, Medical Director of the public schools, assisted by the school nurses and in the parochial schools by the health officer and the health department nurses.

In the first year 2,674 children or about 56% of the pupils in these grades were tested and given the T-AT if necessary. In the six subse-

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quent years (through 1929) 3,441 additional children have been protected in this way, making a total of 6,115 school children.

Each year children who had received toxin-antitoxin the previous year and whose parents consented were re-Schicked and if still susceptible, as about 20% of them were, they were again given the toxin-antitoxin. This in a few cases was done several years in succession before immunity was established.

The accompanying table summarizes this work.

PRE-SCHOOL CHILDREN

Immunization of children below school age has been carried on at the Community Health Centre of the Brookline Friendly Society, and we have a record of 455 young children who have been protected there in the past seven years. This is a rather poor showing for this important age group, but we have reason to believe that many young children have been protected by private physicians of which we have no record. Among the well-to-do families who employ pediatricians to supervise the health of their children this age group is well protected, but in families attended by general practitioners the children are seldom protected until they enter school, for few general practitioners are practicing real preventive medicine.

The 455 pre-school children protected at the Health Centre added to the 6,192 school children makes a total of 6,647 children recorded as having been treated.

EDUCATIONAL WORK

The only real obstacle to the practical elimination of diphtheria in a community is failure of the parents to consent to the treatment. This obstacle can only be overcome by education.

At the onset of this work in 1923 a public meeting was held in the High School Auditorium, the principal feature of which was a talk on diphtheria prevention illustrated by a movie film. As personal contact in the home is an important part of all public health endeavor, the public health nurses have been instructed to urge parents to have their children immunized.

As there are no movies in Brookline the only effective instrument for educational work has been the *Health Bulletin*, published quarterly by the Health Department, and distributed to every household in the town. Through this publication, the citizens of the town have had the subject of diphtheria prevention constantly kept before them, and this has undoubtedly been a factor in obtaining the consent of the parents.

DIPHTHERIA MORBIDITY AND MORTALITY—BEFORE AND AFTER

The accompanying chart shows the course of diphtheria morbidity and mortality since 1905.

During the six years previous to 1923 when this work was started there were 288 cases and 11 deaths: in the six subsequent years there have been 51 cases and no deaths. In 1922 there were 83 cases and 5 deaths; in 1923, 45 cases and one death. Since then there have been no deaths and the record of cases is as follows: 16 in 1924, 10 in 1925, 8 in 1926, 9 in 1927, 3 in 1928, 5 in 1929.

Of the cases that have occurred since 1923 none have had the protective treatment with two possible exceptions. The son of a woman with clinical diphtheria was said to have had a sore throat the week before. His throat was then clear but his culture was positive. He had had three doses of T-AT but had not been retested. The other exception probably did not have diphtheria but is included because so reported by the attending physician. This was a girl who had had three doses of T-AT and on retest was found to be immune. She had a severe scarlet fever in the course of which extensive membrane developed in her throat. Two cultures were somewhat suspicious of K. L. and she was given diphtheria antitoxin. The membrane only partially cleared. The high fever and the intense inflammation of the throat persisted after the suspicious bacilli had disappeared and she died two weeks later with all the symptoms of a scarlet fever sepsis.

In any group of reported cases there are always a certain number where the diagnosis is questionable. There are the cases diagnosed as diphtheria from the clinical appearances alone

TABLE I

SUMMARY OF THE SCHICK TESTS AND TOXIN-ANTITOXIN INOCULATIONS IN THE BROOKLINE PUBLIC AND PAROCHIAL SCHOOLS—1923-1929

	Number Tested	Number Immune	% Immune	Number Susceptible	Toxin-Antitoxin Doses 3	2	1
First Schick	6115*	1454	23.8	4761	3966	387	116
First Re-Schick	2679	2139	79.8	540	250	32	60
Second Re-Schick	608	570	93.7	38	26	3	6
Third Re-Schick	105	99	95.2	6			

*In addition there were 77 school children inoculated without a Schick test, making a total of 6192 school children treated. We have Schicked most of the school children before giving the T-AT, chiefly because that was recommended when this work was started. It is certainly not necessary in the kindergarten and first grades, but with the older children it has the advantage of indicating through the "combined reactions" which children are likely to react severely to the toxin-antitoxin. Severe reactions have been very few since the State Department of Public Health has been supplying the 1/10 L+ toxin-antitoxin.

where subsequent cultures are all negative, and there are the cases not clinically diphtheria which have a positive culture. A considerable number of cases of these two types continue to be included among those reported since 1923. In fact during the past five years there have been only six clean cut typical cases of diphtheria in childhood.

Diphtheria has been a disease chiefly of children. Before 1923, 82.5% of the reported cases were among children under fifteen years of age. Since 1923, with a majority of the children protected, only 44.2% of the cases have been children.

An unfortunate result of a low diphtheria rate is that physicians do not keep the disease in mind when they see a patient with a sore throat and are making fewer cultures. This is certain to lead to unnecessary disasters. In the same way the diagnostician in a small municipal laboratory whose experience does not date back to the pre-Schick days will find it almost impossible to see enough positive cultures to familiarize himself with the vagaries of the K. L. bacillus.

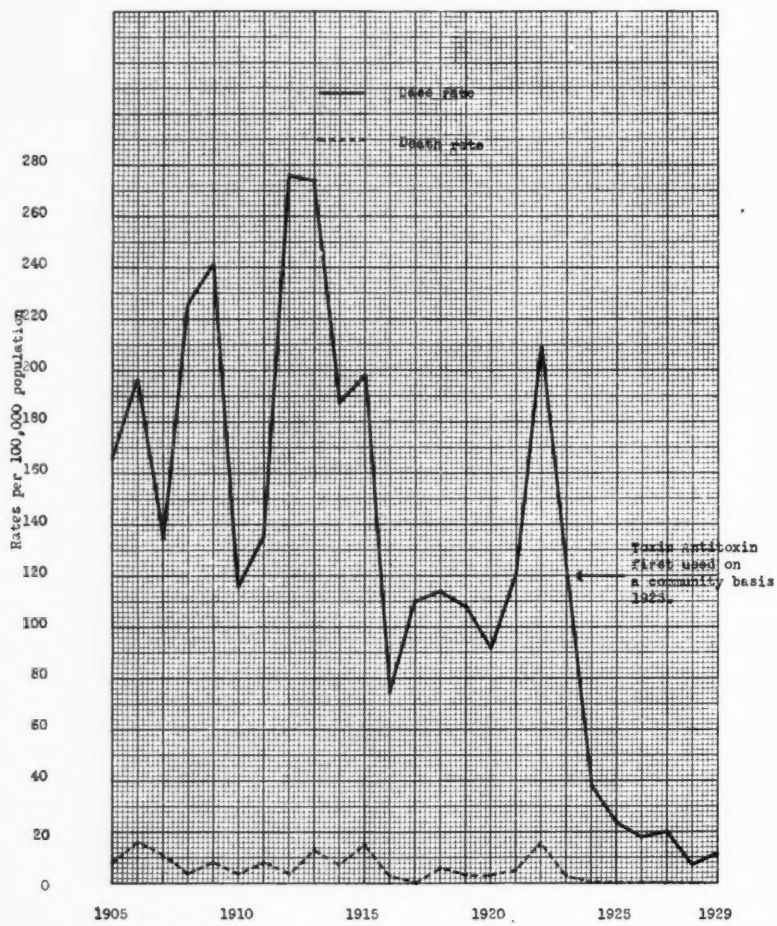
COST OF THE WORK

The total amount expended by the town for this work during the past seven years has been $4,010, which however does not include the services of nurses and others employed on a full-time basis.

DIPHTHERIA

CASES AND DEATHS PER 100,000 POPULATION

1905-29



Assuming that without toxin-antitoxin diphtheria would have continued for the six years subsequent to 1923 at the same rate as for the six previous years—an assumption, of course, which we are not really justified in making—the return on this small investment is the prevention of 237 cases and 11 deaths. A very material saving has come from the fact that just at the time the diphtheria cases fell off the town was obliged to provide additional beds for tuberculosis, and the fine brick building with twenty beds formerly used for diphtheria was made available for tuberculosis. The town would otherwise have had to provide an additional building at a cost of over $50,000.

The town probably never made any appropriation which yielded a greater return either in dollars and cents saved or in the prevention of disease and death.

ANNUAL REPORT OF THE DIVISION OF ADULT HYGIENE OF THE MASSACHUSETTS DEPARTMENT OF PUBLIC HEALTH

BY HERBERT L. LOMBARD, M.D.*

DURING 1929 the work of the Cancer Section has continued along the lines of previous years. No new clinics have been opened, but the preliminary details for the establishment of one in Brockton have been nearly completed.

In April, 1929, the Department, with the coöperation of the Cancer Committee of the Massachusetts Medical Society and the Massachusetts Branch of the American Society for the Control of Cancer, furnished a graduate course in cancer to 211 physicians and 199 dentists. Clinics were held at the Boston hospitals, mornings and afternoons, on various aspects of the cancer problem.

In June, 1929, the Cancer Section became the Division of Adult Hygiene and the activities were extended to include all chronic diseases.

During July, August, and September an extensive field investigation of chronic disease was made in Brockton, Abington, Kingston, Pembroke, Holbrook, Greenfield, Amherst, and Shelburne Falls. This was accomplished by means of house-to-house canvasses in which many questions regarding the incidence and care of chronic diseases were asked. In addition to the field work, questionnaires were sent to physicians, hospitals, and nursing homes.

In the spring, a survey of the influenza epidemic was made in Great Barrington, Palmer, Nantucket, and Saugus. This was done in coöperation with the United States Public Health Service which conducted a similar survey in Boston.

Due to the increased amount of work along statistical, social service, and educational lines the office personnel has been increased from eleven to twenty.

CONFERENCES

A conference for the cancer clinic committees was held at the Lowell General Hospital in October and one for the educational and social workers in Worcester in November. Both of these conferences were well attended.

EDUCATION

The educational activities of the preceding year have been continued. Twenty-nine radio talks have been given and over 3,500 articles have been sent to newspapers. While many of these were not printed and material from the local cancer committee was often substituted, the amount of newspaper publicity received from the clipping bureau indicates that the Massachusetts newspapers have been most coöperative. Over 190,000 pamphlets have been distributed during the year.

There have been seventy-five public lectures delivered during the year, with an average attendance of ninety-five, omitting those given during the Graduate Course.

A lengthy pamphlet on adult hygiene is under preparation.

STUDIES

The studies in which the Department has been interested during the past year have been as follows:

1. Study of the Death Records from Cancer: The following conclusions have been reached:

   (1) A sufficiently close correlation exists between the social classes in England and the nativity groups in Massachusetts in respect to the cancer death rate, to warrant the opinion that economic social conditions are a factor in the causation of cancer.
   (2) The foreign born have much higher rates than the native born of native parents in cancers of the buccal cavity and the stomach.
   (3) Cancer of the stomach is abnormally high among both males and females for all foreign born groups, and cancer of the buccal cavity among the Irish, English, and Teutons.
   (4) Cancer of the lower intestinal tract in females is high among the Irish and English, while it is low among the Italians.
   (5) The Canadians have a high rate for cancer of the uterus, and the Russians a low rate.
   (6) Both the Italians and the Russians have low rates for cancer of the breast.
   (7) The Irish and the Italians show higher rates in Boston than in their native countries.
   (8) The sex ratio (females per male) is much higher for the native born of native parents than for any of the foreign nativity groups which have been studied in Boston and Europe.
   (9) The Irish have slightly poorer diagnostic facilities than the other foreign groups, but the foreign born taken as a whole have sufficiently good diagnosis to eliminate the factor of diagnosis in discussing the high cancer death rate of the foreign born.

2. Visiting Nurses' Questionnaires: Data is still being collected.

*Lombard—Director, Division of Adult Hygiene, Massachusetts Department of Public Health. For record and address of author see "This Week's Issue", page 738.

3. Boston Dispensary Study: Partial tabulation of this data has been made.

4. Massachusetts General Hospital Study: This study is nearly completed and will be published by Miss Ida M. Cannon. It shows the hospital rates for cancer by nativity. These differ considerably from the cancer death rates for the State.

5. Lawrence Survey: Analysis of the data is under way.

6. Cambridge Survey: The survey is nearly completed and the records have been partially analyzed.

7. Wayland Survey: A report of the hospitalization problem was issued early in the year and studies on the morbidity are under way.

8. Pondville Nativity Study: A study of cancer by the nativity of grandparents has been partially completed.

9. Influenza Survey: The data obtained in a house-to-house influenza survey was analyzed and reported in the *New England Journal of Medicine*.*

10. Barbers' Survey: The data obtained in the barbers' survey was tabulated and analyzed.

11. The Reason Why Clinic Patients Delay: The social workers in the cancer clinics interviewed 221 cancer clinic patients to obtain the reason for their delay before consulting a physician and the delay between diagnosis and treatment. These records have been analyzed, together with information from cancer clinic records, and the results published in the October-November-December issue of the *Commonhealth*. The following conclusions have been made:

(1) The median delay between first symptom and first consultation with a physician for individuals with cancer coming to the State-aided cancer clinics in Massachusetts is 6.5 months.

(2) The males delay longer than females except for skin cancers.

(3) The greatest delay is in cases of cancer of the skin and the shortest delay is among those patients having cancer of the uterus.

(4) Thinking the condition was a minor malady is the largest single cause of delay. Among the males, this reason is considerably greater than among the females.

(5) The greatest single cause of delay between consultation with physician and treatment was because of poor advice on the part of the attending physician.

(6) Forty-five per cent. of the cancer patients had a median delay of six months after consulting a physician, while 55 per cent. received treatment within a short time following diagnosis.

(7) The median interval of delay is increasing each year since our first figures in 1927. This is profoundly disappointing in view of the intensive medical and lay education carried on. Possibly it is in part due to the fact that the percentage of individuals with skin cancers attending the clinics has increased, as this group delays much longer than any other. Our current figures, however, indicate that the delay in skin cancers is increasing, while other types remain about the same.

12. Increase of Chronic Disease: The death records from all causes from 1850 to 1920 have been studied and show:

(1) The population of Massachusetts has been gradually growing older.

(2) The crude death rate has decreased, but for age groups over fifty there has been an increase.

(3) Infections; tuberculosis; old age, ill-defined, and unknown; epilepsy, convulsions, and sudden death in individuals over fifty have a downward trend.

(4) Cancer, diabetes, heart, appendicitis, nephritis, and a group composed of leukemia, biliary calculi, diseases of the prostate, benign tumors of the uterus, and accidental gas have an upward trend which apparently is caused by factors other than errors in diagnosis and certification, public health activities, and changes in the people and their environments.

(5) All other diseases show an initial increase followed by a decrease. This trend gives the impression that it is caused by changes in the composition of the people and their living conditions.

13. Chronic Disease Survey: The records of the house-to-house canvass, together with the information on the questionnaires received from physicians, hospitals, and nursing homes are being studied. From them we expect to get information regarding the volume of chronic disease in Massachusetts, how it is being cared for, and various factors regarding individual diseases, such as heredity, nativity, occupation, etc.

STATE-AIDED CANCER CLINICS

During the year 1929, 2106 individuals attended the State-aided cancer clinics in Massachusetts. Five hundred and thirty-four of this number had cancer and 147 had precancerous conditions. The attendance at the cancer clinics in 1929 has been less than in 1928, but the percentage of cancers has increased, while the percentage of precancerous conditions has remained about the same. The falling off in clinic attendance is largely confined to conditions other than cancer, as the number of cancer cases in the two years is nearly identical. (Table I.)†

Table II shows the attendance rate at State-

*Bigelow and Lombard: Respiratory Tract Infections in Massachusetts in the Winter of 1928-1929, N. E. J. of M., 201: 474-478:1929.

†All tables have been omitted but may be obtained by writing the State Department of Public Health, 315 Ford Building, 15 Ashburton Place, Boston, Mass.

aided cancer clinics for the cities and towns in Massachusetts which had ten or more of their inhabitants coming to the clinics. The towns around Pondville have the highest rate, while Lowell and Lynn have the highest rates for the clinic cities.

The State-aided cancer clinics having the largest attendance are Pondville, Lowell, Lynn, and the Boston Dispensary. The percentage of cancers is high in the Pondville and Boston Dispensary clinics and low in the Lowell and Berkshire clinics. Both the Boston Dispensary and the Lowell clinics have rather a large percentage of deferred cases. (Table III.)

The median duration between first symptoms and first visit to a physician for cancer patients increased from 6.1 months in 1928 to 6.6 months in 1929. The delay between first symptoms and first visit to a cancer clinic for cancer patients has also increased. On the other hand, the delay between first symptoms and first visit to physicians for precancerous conditions decreased from 11.0 months in 1928 to 8.8 months in 1929, and the delay before visiting cancer clinics also decreased. It is encouraging to find that the patients with precancerous conditions are seeking advice at an earlier period, but the increase in the delay of the patients with cancer indicates that further educational activities must be conducted to induce these patients to seek advice at an earlier stage in their disease. (Table IV.)

Skin cases show the longest delay before coming to the cancer clinics for both years. As we are getting more cases of skin cancer each year, this may be the cause for a part of the increase in the median duration of delay. The patients with cancer of the uterus come to the clinic at an earlier period than do those with cancer of the breast. (Table V.)

In 1929 a larger number of patients came to the clinics at the advice of physicians than in 1928, and a smaller number came because of newspaper publicity. In both years physicians referred over one-half of the individuals with cancer. (Table VI.)

The reasons for coming to the clinics varied in the different communities. The Berkshire clinic had the largest percentage of cases referred by newspapers, the Pondville clinic had the largest number referred by physicians, and the Lowell clinic had the largest number of cases referred by friends and relatives. (Table VII.)

When the cancers were divided into their various locations, it was found that physicians sent the largest percentage for all types for both years. The second largest percentage for cancer of the buccal cavity and oesophagus was friends and relatives in 1929 and newspapers in 1928. The second largest percentage for cancer of the stomach was past experience in 1929 and an equal percentage for newspapers and friends and relatives in 1928. The second largest percentage for cancer of the digestive tract other than the stomach was past experience in 1929 and an equal percentage for social service and friends and relatives in 1928. The second largest percentage for cancer of the uterus, cancer of the skin, and cancer of the breast was newspapers in both years. The second largest percentage for cancer of all other organs was newspapers and past experience in 1929 and newspapers in 1928. (Table VIII.)

Cancer of the buccal cavity, uterus, skin, and breast constituted the majority of the cancer cases in the clinics. The percentages of skin cancers and uterine cancers have increased each year, while those of breast and buccal cavity have fallen off. Cancer of the stomach, which is the largest single cause of death from this disease, has only a small percentage of cases at the clinic. (Table IX.)

About one-fifth of the patients with cancer had never consulted a physician before coming to the State-aided cancer clinics. About one-fourth of all the breast cases, nearly one-third of all the skin cases, and about one-fifth of the buccal cavity cases had seen no physician. The percentages for these diseases are higher than in 1928. (Table X.)

In 1929 the symptoms which brought patients to cancer clinics were similar to 1928. There was an increase in the number who came as a result of swelling and a slight decrease in those who came as a result of pain. The percentages of cancer and precancerous patients who came with pain as a symptom are much lower than those in the other groups in both years. This again emphasizes the statement that pain is rarely a symptom in early cancer. (Table XI.)

There is not much difference in the nativity distribution of patients by clinics in the two years' study. (Table XII.)

About one-third of the cancer patients were recommended to have an operation; about one-half radiation. The percentage advised to have operation is less than in 1928, while the percentage of those advised to have radiation is larger. (Table XIII.)

In 1929 more patients were advised to have treatment at the cancer clinics than in 1928, but fewer patients were advised to have treatment at Pondville. Skin cancer was the type most frequently referred to the cancer clinics for treatment. A larger percentage of cancers of the digestive tract other than the stomach was referred to Pondville than of any other type of cancer, and a larger percentage of uterine cancers was referred to local hospitals than of any other type of cancer. (Table XIV.)

The cancer rates by occupation for those occupations having ten or more individuals attending the clinics show that students, stenographers, and infants have low rates; carpenters, laborers, farmers, and retired have high rates; and the majority of occupations have medium rates. The chance fluctuations are large and the difference between many of the groups is insignificant. (Table XV.)

APPENDICITIS IN PREGNANCY

BY B. B. LANDRY, M.D.*

ACUTE appendicitis is, and ever will be, one of our greatest surgical problems. It can almost with certainty be predicted, because of factors and circumstances which vary in each case, such as the duration of the disease, the element of infection, the question of the patient's resistance and whether or not cathartics have been administered, that the best present-day mortality figures of around 2.5% will be but little improved upon.

The seriousness and the frequently dire outcome of this always potentially lethal disease need no emphasis. While the best mortality statistics are from 2.5% to 3%, these are found principally in only a few of the best clinics. The country-wide figures are much higher and in recent years have increased rather than decreased. It is so common a disease that, despite the numerous serious aspects of it, we are prone to omit it from frequent discussion in our journals and meetings. Nothing wiser, however, has perhaps been said than a statement attributed to one of the Mayos to the effect that at least every five to ten years there should be held, among the various medical societies, a symposium on appendicitis, aimed especially to be of benefit to the rising generations of medical men.

It is with a very complicating aspect of appendicitis, this disease associated with pregnancy, that this paper deals. Fortunately, it is of rather rare occurrence, being estimated to take place once in 10,000 cases. De Lee of Chicago a short time ago stated that in thirty years of almost exclusively obstetrical practice, he had seen but four cases of acute appendicitis occurring during the latter months of gestation. Other favorable statistical data are to the effect that 80% of cases have happened during the first six months, when the difficulty of dealing with such a condition is much less than toward the end of pregnancy. Further, appendicitis is said to be much more frequent during the third and fourth months.

Other estimates are of its greater frequency, namely, in 1% of pregnant women, but this figure includes, decidedly, chronic and acute appendicitis alike. It is also said that 2.5% of women having appendicitis, either acute or chronic, are pregnant. Perhaps, as a general matter, we have had, in the past, erroneous notions as to the frequency of attacks of appendicitis, most of them, fortunately, mild ones. It is our belief that many attacks of moderate catarrhal appendicitis have been overlooked because of our habit of minimizing the many and varied discomforts and disorders which take place so often in the pregnant woman. For example nausea, vomiting and constipation are common during pregnancy and, despite the presence of more than mild pain, infrequently are accredited the topmost importance as they are attributed to the pregnancy. However, we would emphasize that careful scrutiny and watchfulness of any pain in the right lower quadrant are extremely necessary. The morbidity and mortality will directly depend on the rapidity of diagnosis and operation.

One of three recent cases demonstrates the need of rigid observation.

Mrs. H., aged 32 years, was admitted July 30, 1928, when four months pregnant, and discharged August 12, later going on to full time delivery.

The chief complaints were pains in the right side of the abdomen, tremors and faintness. There had never been any similar attacks, but during the previous two years soreness in the right lower abdomen had often been noted. Before the attack of pain, which started at 8 o'clock in the evening after returning from a long auto trip, she had had frequent nausea and at times retching. The patient was a nurse and her highly nervous state was explained by her knowledge of her condition and her realization of the seriousness of an acute appendicitis. The temperature at entrance, soon after the onset of the attack, was 99.6, pulse 100, and respirations 28. The white blood count was 8,000, with polymorphs 74%, and lymphocytes 26%. The urine was negative and remained so. The patient was kept under careful observation. The next morning the white blood count was 9,000, and the differential 86% and 14%. Another count, however about four hours later, showed 12,000 leucocytes. Operation was decided on and a long appendix containing bloody fluid removed. Recovery was good.

Diagnosis: The diagnostic criteria are the same in the pregnant as in the non-pregnant state, with two exceptions. First, more reliance should be placed on localized pain, since outside of this cardinal symptom of appendicitis all the others may occur from other causes. Nausea and vomiting are frequently absent at the onset, or may be present and due to associated conditions of pregnancy such as toxemia, or a mild nephritis. Secondly, the leucocyte count, unless greatly increased, has not the same significance, for a leukocytosis up to even as much as 13,000 cells is normal and often found in pregnancy. However, a gradual rising count or a change in differential cell values is of extreme importance and of great aid, as exemplified in the case cited.

Differential Diagnosis: The same conditions must be ruled out as in the non-pregnant woman, namely, any acute abdominal disease and diseases of the kidneys; to mention the more common ones, pyelitis, renal colic, ureteral stricture, hydronephrosis, ovarian cyst, ectopic pregnancy, spastic constipation, cholecystitis, gaseous distention, etc. In passing, it might be stated that

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when in doubt it is certainly wiser to operate than run any risk.

A very important consideration in diagnosis is the past history, for often women developing acute appendicitis have had disorders of this organ previously. Findly reported 15 cases, in 14 of which there had been previous attacks. Schmid, in a discussion of first attacks and recurrences says that, out of 486 cases, he obtained definite information in 162, of which number 125 gave a history of antecedent attacks.

In 3,800 cases of pregnancy, Felkner found that attacks of appendicitis, either in acute or chronic form, were observed to take place in all cases but one in which the disease was known to have existed previously. Hence in a case under observation, with more or less doubtful symptoms the history of antecedent attacks will be of great aid in diagnosis and surgical relief will often be hastened. It can here again be emphasized that even with mild attacks conservatism is hardly justified.

Brief mention of the following case will support the above contentions:

Mrs. D., aged 31 years, in her fourth month of pregnancy, was seen in consultation, complaining of a drawing pain in the right lower quadrant directly along the line of a right rectus incision made there 15 years previously. At that time she had had appendicitis and peritonitis. The appendix had not been removed, she stated. The primary diagnosis in this case was not chronic appendicitis but post-operative adhesions. At operation, the great omentum was found attached to the scar and was made taut by the enlarging uterus, over which it was spread in fan-like position. The appendix was a short, obliterated one.

Just why there is recurrence of attacks of appendicitis during pregnancy is not entirely explained. Of course gestation occupies a period of nine months and it is quite conceivable that an attack might occur as often as once every six to nine months in anyone having chronic disorder of the appendix. On the other hand, there seems to be a definite relationship in many cases. For example, it is easy to visualize an adherent appendix being influenced by the enlarging uterus, the caecum being pushed up, and a consequent weakening of structure or interference of circulation of such an appendix. Probably constipation, so common to the pregnant woman, has something to do with recurrence.

TREATMENT

Preventing the possibility of an acute appendicitis during pregnancy is the primary desideratum of treatment. As we have stated, the tendency for attacks to recur during pregnancy in women subject to previous attacks, the greater the difficulty of operation, especially after the fourth month, the danger of a chronic appendicitis becoming acute and going on to perforation when the omentum and small intestines are pushed up out of the lower abdomen by the enlarged uterus should lead us to urge a woman known to have a diseased appendix to have the organ removed either before marriage or in the very early months of pregnancy.

During the first six months the treatment of acute appendicitis varies but little from that in the non-pregnant state. Extremely careful abdominal manipulation is more necessary than ever and whenever possible, drains are to be avoided to prevent weakening of the abdominal wall.

During and after the seventh month surgical judgment and ability count greatly. In the abdomen with an acute appendicitis we must be guided as to what or what not to do by the conditions found, namely, the size of the uterus, the position and accessibility of the appendix, the amount of inflammation of the appendix and the presence or absence of peritonitis, diffuse or localized. The omentum, "policeman" of the abdomen, is temporarily side-tracked and hindered in its functions, while the small intestines are pushed aside. Because of these facts localization is less apt to occur and perforation with spread of infection can be most rapid.

If the appendix is quite accessible, its removal, of course, is indicated and even though abortion subsequently occurs, no harm is done if the abdominal wall be adequately sutured. However, if there be difficulty of approach to the appendix, with the possibility of much handling necessary for its removal, it is wiser to institute drainage immediately and forego removal till later. In some cases, several drains will be necessary and, other things being equal, the wound will be weaker or stronger, depending on the number and size of the drains. Abortion frequently occurs and a hernia might often develop, but a live mother and perhaps baby are paramount to any hernia, large or small. If abortion does not take place during or near this seventh month period and recovery from the acute appendicitis ensues, then the patient should be allowed to progress to the completion of pregnancy.

During the last two months the problem is a gigantic one and the surgeon and obstetrician must work energetically for now the appendicitis and pregnancy must both be handled as efficiently as possible. Because of the unguarded state of affairs in the lower abdomen, if the attack is more than a mild one, perforation and peritonitis come about quickly. Now if only the appendicitis be dealt with, labor will soon set in and fresh protective barriers will be disrupted, drains disturbed and pus further spread throughout the abdomen. Evaluating the various means of terminating gestation, we find that accouchement force, now practically little used, would only add greater shock to an already more or less exhausted patient. Bougies and bags, in handling the pregnancy, would cause the loss of valuable time in dealing with the appendicitis, so that we are practically left with Caesarean section alone and it becomes a question of which

type. The vaginal is bloody and more apt to produce shock than the abdominal method. Heroic measures are necessary in this very precarious state of affairs.

SUMMARY

The always lethal possibilities of an acute appendicitis at any time, in man or woman, the marked possibilities of such in a pregnant woman, especially if it occurs during the latter months, the tendency for pregnancy to bring about recurrence of a chronic appendiceal condition, or of its becoming acute, should forcibly argue for the urging of women having a so-called chronic appendix to have it removed either before marriage or in the early months of pregnancy. Whenever a reasonably certain diagnosis is made, radicalism rather than conservatism is called for. Pregnancy and a diseased appendix are, as one might say, incompatible, and as Babler states, "The mortality of appendicitis complicating pregnancy is the mortality of delay."

DIAGNOSIS BY THE USE OF THE BRONCHOSCOPE

Philadelphia, March.—Cancer of the lungs and stomach, as well as of the air and food passages, now may be detected in its incipiency by the use of the bronchoscope, a device originally intended to locate foreign substances in the human body.

Dr. Chevalier Jackson, noted bronchoscopist and inventor of the bronchoscope, made this statement today in revealing the results of experiments made in the Chevalier Jackson Bronchoscopic Clinic at the Temple University Hospital. Dr. Jackson is Professor of Bronchoscopy in the Temple University School of Medicine.

In announcing his discovery, Dr. Jackson declared that the board of trustees of Temple University, recognizing the importance of the bronchoscope in research into all phases of diseases of the lungs, had decided to construct an extensive laboratory system for that purpose. Bronchoscopic cancer research will be stressed.

As a result of Dr. Jackson's discovery, easy and direct access to the afflicted parts of the lungs and stomach is provided. Now according to Dr. Jackson, the bronchoscope, heretofore used for removing pins, coins and other foreign bodies, may prove one of the most potent factors in the battle against cancer by detecting its presence.

Dr. Jackson also announced that the Temple University Medical Centre, created recently by the consolidation of the Temple University School of Medicine, Temple University Hospital and School for Nurses, is preparing to conduct exhaustive researches into "the question of the obstruction of the air passages in children, following diphtheria and other diseases".

Dr. Jackson made it clear that in the detection of incipient cancer by the bronchoscope, only the lungs, air passages and stomach were involved, as it is to these places only that the instrument has access. When inserted into the suspected part, and where growths of any sort are discovered, portions of them are removed for analysis. Use of the bronchoscope in administering radium to the affected tissues, Dr. Jackson said, will provide another valuable aid in the treatment of the disease.

"The bronchoscope", said Dr. Jackson, "affords easy access to the lung in animals, rendering the study of physiology, anatomy and disease under the guidance of the eye quite possible without doing any harm to the animal. For this reason the study can always be carried on under perfectly normal conditions of the lungs in the animal studied.

"It is very interesting to note that the studies heretofore made on dogs with the bronchoscope have resulted in discoveries as a means of curing diseases of the dog. But the dog is getting the benefit of the study as a patient. The veterinarians are making use of all the results obtained in treating diseases of dogs."

Dr. Jackson's future researches into the subject will be made exclusively at the Temple University Medical Centre, as he has resigned his associations with other clinics he has established in this city, after having turned the work at each over to others.

The bronchoscope cancer research is one of three separate scientific investigations to be conducted at the Temple University Medical Centre. Two other new departments have been organized, one the Neurological Foundation, "for the study of mental and nervous diseases and the development of measures leading to a better solution of nervous exhaustion, insanity and the like," and the other a general medical research section "for investigation of the conditions leading to diabetes, rheumatism and abnormal blood pressure".

MALARIA IN THE UNITED STATES

In connection with field investigations relating to public health problems, the U. S. Public Health Service points out that malaria was once very prevalent in the northern United States. During the past 50 or 60 years it has greatly diminished and is no longer a serious problem there. In the Southern States malaria has also decreased, but in many localities the rate is still high and constitutes an important sanitary problem.

The liability of a serious increase of malaria in the North is not great so long as the present economic status of that region persists; in the South the danger of a recrudescence of the disease is much greater, as the events of the past few years have demonstrated.

The factors concerned in the diminution of malaria in the United States are interdependent; their importance has varied with time and locality, but all have been closely related to the agricultural development of the country.

GRADUATE COURSE IN CANCER

MALIGNANT DISEASE OF THE SKIN—I*

BY LELAND S. MC KITTRICK, M.D.†

IN taking up the superficial skin carcinomata which are so common and so important, I am going to discuss merely the clinical aspects.

Types. Technically a given lesion of this type is classed as either a squamous cell or a basal cell carcinoma. You may recognize the latter more readily as the so-called rodent ulcer. Practically it is not always possible to distinguish each type clinically. The squamous cell lesion is the more malignant of the two although certain forms of squamous cell carcinoma are essentially benign in character. There is another type of squamous cell carcinoma which is quite a different story. It does invade. It grows rapidly and metastasizes to the glands just as malignant disease does elsewhere. The lesion which is rapidly growing clinically is usually the more malignant type of lesion. The relatively nonmalignant lesions, whether they be squamous or basal cell in type, remain superficial for long periods of time. The rodent ulcer clinically is a relatively superficial, indurated, usually ulcerating, lesion. Ulceration spreads around its margins but the lesion remains localized in the skin itself for quite a long period of time, sometimes years, and then invades the underlying fascia. Then as it goes through the fascia, it is again retarded by the periosteum for a long time. It kills entirely by local destruction.

In the great majority of patients with skin cancers, trauma is an important etiological factor, probably a larger factor in the production of malignant disease of the skin than in almost any other type of malignancy.

Etiology. Trauma may be chemical or physical. One of the most outstanding results of chemical trauma is the so-called "tar" cancer. A more common lesion in this locality is the multiple carcinomata associated with multiple keratoses, due to arsenic. Arsenical keratosis and arsenical carcinomata are familiar clinical conditions.

Another definite type of chronic irritation, leading to the development of cancer, is that seen in old scar tissue, whether due to skin tuberculosis, an old burn, or long standing ulceration of an amputation stump. If at any time you see an old scar with an open lesion, which will not heal, the possibility of a beginning cancer should always come to mind. It is very simple to take out a piece of that tissue and have it examined microscopically, but remember that you may not have excised the particular area which has become malignant; therefore do not be satisfied with the negative report.

X-ray is another irritant, which as you all know is a definite cause of multiple keratoses, later growing into epidermoid carcinoma.

The most common of all the precancerous skin lesions is the so-called keratosis senilis. However, this is a bit of a misnomer because one sees a surprisingly large number of young people who have keratoses of the face, or even early carcinomata. Keratosis senilis seems like a definite stage in the development of epidermoid carcinoma. In many of these patients you see all stages of the disease; simple keratosis, keratosis that is slightly thickened and ulcerating, and other lesions which are definitely cancer. Without treatment they may take on really definite serious proportions.

Treatment. The principles of treatment for these various types of skin cancers are very well standardized and very simple. For the keratoses, radium probably is the most satisfactory remedy. However, it is not always available. Excision in the smaller lesions is perfectly good but rather more drastic than is necessary. For those who have the various forms of electro-therapy, superficial coagulation, or strenuous desiccation will prove satisfactory. The one important thing to have in mind is to destroy the superficial lesion entirely, no matter what type of method is used.

Malignant disease itself must be destroyed entirely. The method of destruction depends upon the facilities which you have at hand. If you have all the facilities, it depends upon the character of the lesion clinically, and the location. Whether you excise it, or cauterize it, or use radium, or remove it by electro-coagulation, the important thing to bear in mind is the fact that you must take out sufficient normal tissue around each lesion to insure getting all of the local growth. Remember that practically all of these lesions recur if they are not entirely destroyed locally. However, taken at the early stage, cure should result in almost all of these cases. In order to bring about that result, it means that every lesion which you think important enough to remove, should be removed with sufficient mar-

*Read at the Palmer Memorial Hospital during the week of the Graduate Course in Cancer, 1929.

†McKittrick—Visiting Surgeon, Palmer Memorial Hospital. For record and address of author see "This Week's Issue", page 738.

gin of normal skin to insure cure, whether it is malignant or not. It is pretty hard to stick to this rule but if you do not you will soon get into trouble. I will grant you that sometimes you are close to important structures, but no matter how close you are, if you have growing malignant disease, you should destroy whatever structures may be necessary rather than have the disease do it (unless of course there is something in the patient's condition or constitution which contraindicates radical removal). It is far more important to destroy the lesion and cure the patient than to attempt to preserve normal tissue. If you once start out to cure the lesion, you must see it through.

It has already been suggested that the location of the lesion influences the type of treatment indicated. Thus radium applied to a cancer of the hand does not give as good results as when applied to a similar lesion on the cheek. It is more painful, possibly because the underlying structures are close and radium causes a slough which is very slow to heal. Excision is the best form of treatment in most cases of this type. In the other parts, except the face, any radical method of treatment is satisfactory. As for treatment of lesions of the face, radium on lesions overlying cartilage may cause chronic ulceration which is painful and very sluggish. We advise you to be very cautious in using radium to destroy epidermoid carcinoma which is over cartilage, as on the nose, or ears. The ear lends itself to plastic surgery very nicely. On the scalp and forehead if one were to adopt the surgical removal, it would mean taking out large areas of the skin the edges of which could not, in many instances, be approximated at the time of operation. In the more superficial types here radium is the method of choice as it leaves but little scar and is efficient. Treatment of lesions of the cheek depends a great deal on where the patient lives. If he is close at hand and can come in conveniently to the hospital, radium is frequently used, but if he lives at a distant point excision of the lesion under novocaine may be preferable. In this way you have the benefit of pathological examination and the patient is rid of his disease in about ten days. When I say surgical removal, I include the so-called surgical diathermy or electro-coagulation.

Melanotic sarcoma. Melanotic sarcoma, or melanoma, may be quite varied in its clinical manifestations. It frequently arises in pigmented moles. Rarely is it noted in the intestinal tract. It may arise in any part of the body where there is pigmentation, and even in parts of the body where one does not commonly expect pigmentation. Metastases as a rule are first to skin, later to the regional lymph nodes, lymph nodes elsewhere in the body, and ultimately to nearly every organ in the body. Bony metastases are very rare.

It is very difficult to determine which mole is sometime going to become a melanotic sarcoma and which one is not. Any pigmented lesion which shows any change in any way, should be removed. Practically all of these lesions will show some change in character or in size before going into the malignant, metastasizing lesion, and if removed then, the patient may be cured. Another factor in deciding whether to remove or not is the location. If the person has a pigmented mole or lesion which is located where constant irritation is unavoidable, I believe it should be removed unless it is so large that removal would be too disfiguring.

There are two things to do for these pigmented moles on the skin. One is to leave them alone until there is some definite change or until something about them makes you feel suspicious. And the other is to take them out and to take them out well. Use no radium. No superficial cauterization. No diathermy. Take them out well with a wide margin of normal skin as though the lesion were already malignant. Leave them alone or else treat them right.

MALIGNANT DISEASE OF THE SKIN—II*

BY AUSTIN W. CHEEVER, M.D.†

I AM going to speak of the superficial epitheliomas. They are of two main types, the squamous cell type and the basal cell type. It may not be possible to differentiate them at the beginning, but as they develop there is a marked difference between the two. The basal cell type is less malignant and has a tendency for the prolongations from the papillae to work outward, and it does not invade very much and does not metastasize; whereas the squamous type is more malignant and has a tendency for the ramifications of the cells to work down in long lines deeply into the tissues, and nothing escapes their ravages—subcutaneous tissues and periosteum and bone all become affected.

The squamous epitheliomas are more apt to be found on the hands and lips than elsewhere but they may be on other parts of the face and neck. They are apt to start as a crusted lesion which very quickly ulcerates and works down deeply as well as outward. The basal type is very much more superficial and is apt to start as a little nodule, a sort of yellow waxy-looking

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†Cheever—Chief of Department of Skin and Syphilis, Boston Dispensary. For record and address of author see "This Week's Issue", page 738.

nodule on the face or hands or occasionally elsewhere, very slowly increases in size and finally is very apt to break down and produce a shallow ulceration, the edges of which expand very slowly so that in the course of many months or several years the lesion may not be more than a centimeter in diameter.

There is a tendency in the squamous cell type for the ramifications to produce pearls or cell nests. They are derived from the squamous cell layer of the skin which is in the process of keratinization, and the cells have a tendency to go on to that and produce pearls. The other type does not go on to keratinization at all as it is soft tissue, which has a tendency to go on to little areas of necrosis instead of pearl formation. The diagnosis lies between epithelioma, lupus, and syphilis.

Lupus ought to be recognized easily because it is a disease of early life, and pressure on the lesions with a glass slide will show the apple jelly nodules. Primary syphilis has to be thought of. The syphilologist is apt to say that any lesion on the lip should be considered as primary syphilis until it is proven something else; and a man interested in epithelioma will say it should be considered as epithelioma until it is proven otherwise. Glandular development in syphilis is rapid. The primary lesion reaches a size in days which the epithelioma would take months to develop; and then a therapeutic test will give the diagnosis in most cases.

MALIGNANT DISEASE OF THE SKIN—III*

BY HARRY FRIEDMAN, M.D.†

I THOUGHT it would be interesting to show you how these types of lesions are treated. Most of the superficial keratoses we treat with radium and x-ray. It really makes very little difference what type of radiation you use, whether radium or x-ray; they respond very readily. We use mostly radium, and when our radium is all taken up, we use the x-ray. We give them a suberythema dose, depending upon the depth of the lesion. Usually one half or three-quarters of an erythema dose will destroy the lesion which is a keratosis and not malignant.

We believe that the so-called epithelioma of the basal cell type, as a rule, should have intratumoral implants. And the idea of intratumoral implants is that we will radiate a definite and specific amount of tissue with a definite and specific amount of radiation; and I think that the failures in x-ray and radium therapy are due to the fact that we have not delivered sufficient dose to the tissues we are treating.

We figure for practical purposes that in epithelioma, one platinum radon seed will destroy a growth one centimeter in diameter.

In superficial cases that is easy to do, but in deep lesions it often becomes difficult, because of the difficulty of spacing the seeds accurately. We use filtered radium, and we have done away with glass seeds. The radiation which comes from the glass seed produces pain and deformity. We use radium seeds, filtered with three-tenths of a millimeter of platinum, and each one of these seeds contains 2.5 millicuries, which will effectively sterilize one square centimeter of tissue.

Now the effects of radium and x-ray are practically the same. The biological effect is identical. The only difficulty we have with x-ray is to control the dosage of radiation in superficial lesions. We can give a destructive dose, but due to the many convexities and concavities of the surface it is hard to give an evenly distributed amount of radiation to the tissues, so we fall back on radium, and all of these cases have intratumoral implants, and one dose, as a rule, suffices.

Ordinarily the squamous cell type is resistant to radiation, and we have had difficulty in treating them. They metastasize very readily. The squamous cell lesions of the lip have all shown metastases except one case on the upper lip which had none. They all metastasize rapidly and are resistant to radiation, and it takes a large amount of radiation to affect them; in other words, you have to give double or triple the amount that you would give to basal cell carcinoma.

*Read at the Boston Dispensary during the week of the Graduate Course in Cancer, 1929.

†Friedman—Roentgenologist, Boston Dispensary. For record and address of author see "This Week's Issue", page 738.

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INJECTION TREATMENT OF VARICOSE VEINS*

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IN the past few years a considerable amount of literature has been written on the subject of the injection treatment of varicose veins, and this paper has been written more or less as a review and study of these reports in our own preparation for carrying out that treatment. The statements made and the conclusions arrived at are, therefore, the result of this study supplemented by a small series of personal cases treated during the past few months. If used properly, there seems to be no doubt but that we have added an important therapeutic measure. On the other hand, the relative simplicity of the treatment and the natural desire of a patient to avoid operation may make it a procedure which will fall into disrepute if used irrespective of certain underlying conditions.

As is so often the case with so-called new methods, this is also not a recent discovery. Pravaz in 1851 invented a syringe for the injection of aneurysm with ferric chloride. Until 1911, however, little progress seems to have been made. At that time Linser of Tübingen, Germany, observed that following the injection of mercuric chloride the veins of the arm became obliterated after many injections. It is interesting to note here that probably many of us have observed after the injection of salvarsan or glucose into the same vein a number of times that there comes a time when we can no longer get into that vein. Sicard observed the same phenomena taking place in treating soldiers with luargol during the war and applied the method to varicose veins, first using sodium carbonate. Since then various solutions have been used, chiefly sodium salicylate, sodium chloride, quinine, urethane, and invert sugar.

If the method proves to be as satisfactory as it seems at the present time, it has certain very distinct advantages over operative treatment. There is no loss of time and no hospitalization with its attendant financial burden. The treatment is ambulatory. There are no disfiguring scars, and what is of some advantage today is the fact that small veins which would not be operated on for their cosmetic effect alone can easily be cared for by this method.

First as to the danger of the method, McPheeters, of Minneapolis, reports the injection of 53,000 cases with seven deaths, which is 0.0024 per cent. This seems to be the largest collection of cases to be fully reported. Kilbourne has collected 4,607 cases treated operatively with a death rate of 0.4 per cent. Besides the seven deaths reported by McPheeters there are at least seven others reported, but there is no way of determining the number of cases injected among which these deaths occur. As with the operative cases, other factors have entered into the cause of death which could not be laid to the injection itself. Another point in connection with the reporting of the cases is that the mortality of the injection treatment cannot be estimated as accurately because the treatment being ambulatory, records are not as available as hospital cases operated.

As to recurrence, various collections of figures show that the injection method is five to six times more certain of permanency. One factor here, however, must be taken into consideration, and that is that with either method the main saphenous must be obliterated or the likelihood of recurrence is much greater.

The pathology following injection has been carefully given by Regard. It must be noted

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that substances chosen for injection are sclerosing and not thrombotic forming chemicals. It is generally admitted today that only the former are safe. Regard describes three stages in the pathological change which take place following injection. The first stage produces a cloudy swelling of the endothelium, which spreads to the outer coat of the vein. This swelling and thickening causes the lumen to be pinched off and the blood is forced out of the vein as it narrows. As this occurs the blood flow slows and thrombosis takes place, and so the second stage appears. The clot is very firmly attached and is nearly an integral part of the vein wall itself, which makes the danger of embolus very slight. The vein, then, with the clot becomes organized. Sicard calls this process a "venitis" as opposed to a phlebitis. This venitis is localized in the vein, varying with the amount and type of solution used. Melkson states that in the smaller veins he believes the blood is fully forced out of the vein and no clot forms at all.

It has been demonstrated by different observers that the blood flow in large varicosities is slowly toward the heart or stationary when the patient is in the recumbent position. When standing, however, the flow is toward the periphery. This is probably one good reason why embolus is rare after injection and why there is a logical reason for having the patient up and about following treatment. McPheeters' figures show only four fatalities from pulmonary emboli or a mortality rate of 0.00754 per cent. from this cause.

The direction of the blood flow in varicose veins is easily determined by the Trendelenburg test. If the leg is elevated and the veins allowed to empty and the patient then stands quickly, the veins will be seen to fill immediately from above. The constriction test simply shows that the leg fills slowly from below. After the veins are emptied, a tourniquet is placed tightly around the thigh and the patient allowed to stand. The veins fill very slowly from below or scarcely at all. If the constriction is removed, of course immediate filling takes place. If, however, the vein does fill rapidly before removal of the tourniquet, it shows regurgitation from deep to superficial veins, usually due to lack of competent valves in the perforating veins.

The treatment itself is easily carried out and causes the patient little discomfort. Contra-indications to injection are a recent phlebitis, cardiorenal disease, or any long standing illness which keeps a patient rundown. Pregnancy is a contra-indication for the quinine solution, and it is just as well to get a woman through her pregnancy and wait a while as many of the veins may disappear. Ulcers and eczema are indications rather than contra-indications.

As I mentioned before, various solutions have been used. Our experience is with the quinine dihydrochloride, and urethane salt and sugar. There is apparently danger of slough with the salicylate solution. For small and medium-sized veins the quinine and urethane works very well, but in some of the larger veins the strengths commonly used are not irritating enough after dilution in the blood, and resort must be made to a more irritating substance as sodium chloride.

The injection is usually given with the patient sitting or standing. Injections are begun at the lower points and subsequent treatments given up the course of the vein. Sometimes it will be found necessary to go back and get areas not covered. Hypodermic needles are used and a two or ten c.c. syringe, according to the drug used. The leg is cleansed with alcohol or soap and water and the needle forced into the vein. Blood is aspirated back to make one sure that the needle is in the vein. Injection is made slowly. The patient will complain of a burning pain if the solution does not go into the vein, and injection should be stopped until it is re-entered. Following injection there may be cramp-like pains in the calf or a cramp in the sole of the foot. As the needle is withdrawn the vein is compressed for a minute or two with a cotton pledglet and a dressing applied with adhesive strapping pressure for a few hours. Treatments may be given every three to four days. After a few hours the vein becomes swollen and tender. The tenderness and soreness varies in the same person as well as in different persons. Marked redness and induration occur at times and are quite uncomfortable for three or four days in some cases. The length of vessel obliterated with the same amount of solution and in veins as nearly the same as one can judge also varies widely. Oedema rarely occurs. In some people a bluish discoloration of the skin results, which lasts for some weeks. This is seen in the thin-walled superficial veins and should cause no worry on the part of the patient. General reactions do not seem to occur and the patients do not complain of the treatment.

In conclusion, then, I think it fair to say that we have a safe, ambulatory, fairly comfortable procedure, and the incidence of death and chance of recurrence are less than with operation.

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REPORT OF THE THIRTY-SECOND ANNUAL MEETING

THE thirty-second annual meeting of the New Hampshire Surgical Club was held at Hanover, N. H., Monday, September 9, 1929.

A week-end outing was arranged to precede the meeting and several of the members took full advantage of their opportunity on the golf links and at the hospitable Hanover Inn.

Sunday evening, September 8, 1929 a delightful social gathering, arranged and given by the Hanover physicians for the members and their wives, took place at the Dartmouth Outing Club.

Beginning at 9 A. M. Monday, September 9, 1929, ward visits at the Mary Hitchcock General Hospital were conducted. Of special interest was a visit to the Dick Hall House and meeting Al Marsters of football fame, then a patient recovering from a severe injury received in the Yale game.

Following the ward visits a splendid operative clinic was put on by the hospital staff. At 11:30 A. M. Dr. Howard N. Kingsford of Hanover, N. H., conducted a clinical pathological discussion at the medical school.

At 1:30 P. M., in the amphitheater of the medical school, the annual meeting took place.

Deceased members were reported as follows:

Dr. Samuel Dearborn, Dr. James T. Greeley of Nashua, N. H.

Dr. Edgar O. Crossman, Dr. A. J. Pitman of Manchester, N. H.

Dr. D. C. McLachlan, Portsmouth, N. H.

Committees on resolutions were appointed as follows:

For Dr. Dearborn and Dr. Greeley; Dr. Charles F. Nutter and Dr. Timothy F. Rock of Nashua, N. H.

For Dr. Crossman and Dr. Pitman; Dr. Robert Flanders and Dr. John F. Holmes of Manchester, N. H.

For Dr. D. C. McLachlan; Dr. Eugene B. Eastman and Dr. Wendell P. Clare of Portsmouth, N. H.

New members: Dr. Robert Brooks of Claremont, N. H., recommended by Dr. Emery Fitch, and Dr. John A. Hunter of Dover, N. H., recommended by Dr. H. O. Chesley, after being favorably reported upon by the executive committee were unanimously elected to membership.

Upon motion of Dr. Emery M. Fitch seconded by Dr. George C. Wilkins the president, Dr. Daniel C. Norton, appointed the following nominating committee: Dr. A. A. Beaton of Franklin, N. H., Dr. J. G. Lawlor of Dover, N. H., Dr. Murray H. Towle of Manchester, N. H., who after deliberation brought in the following list of officers who were unanimously elected:

President, Dr. John F. Gile of Hanover, N. H.

Vice-President, Dr. Carleton R. Metcalf of Concord, N. H.

Secretary-Treasurer, Dr. Wendell P. Clare of Portsmouth, N. H.

Executive Committee: Dr. Timothy F. Rock of Nashua, N. H.; Dr. Arthur T. Downing of Littleton, N. H.; Dr. John Bowler of Hanover, N. H.

The literary program was as follows:

President's Address, "Toxic Headache", Daniel C. Norton, M. D. Discussed by Dr. H. H. Amsden, Dr. A. Provost, Dr. J. F. Gile, Dr. Robert Flanders, Dr. C. F. Butterfield, Dr. C. F. Nutter, Dr. R. O. Blood, and Dr. H. A. Des Brisay.

Paper: "Collapse of the Lung", Carleton R. Metcalf, M. D. Discussed by Dr. Emery Fitch, Dr. H. O. Chesley, Dr. C. C. Wilkins, Dr. Robert Flanders, Dr. John Bowler, Dr. F. P. Scribner.

Paper: "Operative Treatment of Chronic Dacryo Cystitis", Adolphe Provost, M.D. Discussed by Dr. D. C. Norton, Dr. H. H. Amsden, Dr. C. F. Nutter.

Paper: "Injection Treatment of Varicose Veins", John F. Gile, M.D. Discussed by Dr. Richard Robinson, Dr. C. E. Butterfield, Dr. C. R. Metcalf, Dr. John F. Holmes, Dr. H. N. Kingsford.

At 6:30 P. M. the annual banquet took place at the Hanover Inn. Dr. H. O. Chesley, acting as toastmaster, cleverly introduced the speakers of the evening and briefly outlined the traditions and purpose of the Surgical Club. The retiring president Dr. Daniel C. Norton and president-elect Dr. John F. Gile made brief but appropriate remarks that were followed by Billy Van, well-known comedian and sunshine man of the world, who spoke humorously of the leading topics of the day not failing to mention, however, his "Pine Tree Soap".

The meeting was profitable and well attended and much credit is due the Hanover members for their careful arrangements of details and their constant attention.

NOTICE OF THE THIRTY-SECOND SEMI-ANNUAL MEETING

The thirty-second semi-annual meeting of the New Hampshire Surgical Club will be held at St. Joseph's Hospital, Nashua, N. H., Tuesday, April 29, 1930.

This meeting, as usual, will consist of a surgical clinic at the Hospital in the morning, beginning at 9 A. M., with a lunch at noontime, followed by a literary program in the afternoon. The subject of anesthesia will be particularly stressed.

Dr. Timothy Rock of Nashua, assisted by the Nashua members of the New Hampshire Surgical Club, has charge of the clinical arrangements and a splendid clinic is guaranteed.

Dr. Wendell P. Clare of Portsmouth, the new secretary of the club, is arranging a very attractive program.

The out-of-state guest will be Dr. George P. Pitkin of the Holy Name Hospital, Taeneck, N. J., who will demonstrate his method of spinal anesthesia with spinocaine and perform several operations. He will also read a paper on the subject in the afternoon. A very interesting and profitable meeting is assured.

Case Records
of the
Massachusetts General Hospital

ANTE-MORTEM AND POST-MORTEM RECORDS AS USED IN WEEKLY CLINICO-PATHOLOGICAL EXERCISES

EDITED BY R. C. CABOT, M.D.

F. M. PAINTER, A.B., ASSISTANT EDITOR

CASE 16151

EDEMA, ORTHOPNEA AND DYSPNEA IN A MAN OF FIFTY-TWO

MEDICAL DEPARTMENT

An Irish meat cutter fifty-two years old entered through the Emergency Ward on October 13. The chief complaints were edema, orthopnea and dyspnea. He was unable to give a history and his wife could give little even concerning the eight years of their marriage. His physician gave a few facts.

The patient was presumably well until three years before admission except for an attack of what may have been rheumatic fever fifteen years before admission. Three years before admission he began to have some dyspnea on exertion. His physician said that "the heart was full of murmurs". On limited activity with occasional periods of rest and digitalis irregularly given he was able to work with only moderate dyspnea until five months before admission. Then he had another attack of "rheumatic fever" of which the doctor and the wife gave different accounts, the doctor describing the joints as very swollen and painful, the wife denying the redness and swelling and maintaining that the patient could use his joints with only moderate discomfort. He soon recovered from this. Five weeks before admission he again began to have dyspnea which had increased in severity to the present. Six days before admission his ankles, then his abdomen began to swell. He had "smothering attacks" but no pain when he lay flat. He was brought in because the edema, orthopnea and dyspnea had become extreme. He had had possibly 58 drops of tincture of digitalis daily for the past eight or ten days, none for some time before that.

Clinical examination showed an obese man, markedly dyspneic and orthopneic, with cold perspiring skin. He had periods of mental confusion during which he appeared unaware of his surroundings and would not respond to questions, alternating with periods of apprehension during which he complained of low abdominal pain. Lips and finger nails only moderately cyanotic. Vessels of the neck moderately engorged. Cheyne-Stokes breathing with rather long period of apnea. Teeth decayed and ill kept. Pyorrhea. Moderate dorsal kyphosis. Barrel chest. Percussion of the heart unsatisfactory owing to hyperresonance of the lung fields. Apex impulse felt in the anterior axillary line. Rhythm regular. Rate about 100. Sounds of poor quality. Second sound accentuated all over. Aortic second sound greater than pulmonic second, both somewhat distant and much masked by the loud breath sounds, as were the murmurs. The most prominent murmur was a diastolic blow heard all over the precordium, possibly best at the base, but this could not be said with certainty owing to the noisy breathing. There was a systolic heard best at the base but also at the apex. Forceful pulse of the Corrigan type. Visible pulsation of vessels of the neck. Moderate peripheral sclerosis. Blood pressure 180/72. Lungs hyperresonant throughout, with signs of a small amount of fluid at each base. Râles at both bases and up to the midscapular region and also in the right anterior chest. Breath sounds vesicular. Voice sounds and tactile fremitus not tried. There was a large amount of ascites, yet not enough to cause tenseness of the abdominal wall. Liver dullness obscured by fluid. It was impossible to palpate the organs or to be certain of masses because of obesity, ascites and anasarca. There was marked anasarca of the lower extremities, hips, and trunk up to the chest. Joints of hands deformed but not painful or stiff.

No laboratory data are recorded except moderately positive Hinton and Wassermann tests and non-protein nitrogen 52.

Temperature (axillary) 101° to 102.4°. Pulse 85 to 95. Respirations normal.

The patient became cyanotic. Venesection was done with considerable temporary relief. The morning after admission he died.

CLINICAL DISCUSSION

BY WILLIAM D. SMITH, M.D.

NOTES ON THE HISTORY

What does the story of the chief complaints suggest to you?

STUDENTS: Heart or liver.

DR. SMITH: We think of the heart first. It might be the end stage of cirrhosis or of nephritis. He may even have chronic bronchitis and emphysema with the heart as a secondary thing. But the heart comes first into our minds.

"The heart was full of murmurs." That rather throws it back into the heart class rather than the lung or liver or kidney.

The fact that he was able to work from time to time is perfectly possible and perhaps characteristic of beginning decompensation.

If we could talk with the doctor and with the wife we might decide whom to believe. I do not think we can decide here. If the wife is right he may have had a very mild rheumatic infection or no rheumatic infection at all. If the doctor is right he probably had a severe rheumatic infection.

The present illness comes down to five weeks'

increasing dyspnea grafted on three years' intermittent dyspnea relieved by rest and digitalis.

It is interesting that his ankles began swelling first, because that is more characteristic of heart disease than it is of cirrhosis or nephritis.

How much of a dose is 58 drops of digitalis daily? The significant thing is that drops and minims of digitalis are quite different. 58 drops from a dropper may be not much over 30 minims measured in a minim glass. It may be only about one-half the quantity you think you are giving or it may be two-thirds, depending on your dropper. Instead of 58 minims he got perhaps 35 minims or a little more; 2 cubic centimeters of the tincture being about 3 grains of the powdered leaves. Therefore assuming he eliminated a grain and a half a day he certainly had not been digitalized. If you ever give tincture of digitalis make the patient get a minim glass and measure it. Otherwise you do not know how much he is getting.

NOTES ON THE PHYSICAL EXAMINATION

His obesity is one more evidence that he was probably not digitalized.

Does the mental confusion mean anything to you? It is nothing more than characteristic of a very sick cardiac.

The low abdominal pain cannot be explained now by anything we have.

The Cheyne-Stokes breathing with rather long periods of apnea means he was a very sick man.

We get back to the heart and the possible diagnosis of chronic emphysema and bronchitis and secondary heart failure. Nothing is said however about attacks of cough or bronchitis, so I think we shall have to drop that.

We have therefore a story of cardiac failure apparently in which the most striking murmur was a diastolic blow heard all over the precordia. It is not described as an early diastolic, but we have a diastolic blow, so we can say it is the blow of what?

A STUDENT: Aortic regurgitation.

DR. SMITH: Yes, probably. We do not know whether that systolic murmur is an organic murmur at the mitral or whether it is a relative mitral insufficiency due to a big dilated heart. The Corrigan pulse adds to the presumability that he had aortic regurgitation.

He apparently did not have fluid in his pleural cavities. He had some râles at the bases, as we should expect.

Can you have ascites due to congestive heart failure without also having fluid in the other serous cavities? Certainly you can.

DIFFERENTIAL DIAGNOSIS

I think it is fair to say that he had heart disease and it is fair to say that he had congestive failure. What kind of heart disease did he have?

A STUDENT: Syphilitic, affecting the aortic valve.

DR. SMITH: He apparently had aortic regurgitation. Why do you think he had syphilitic heart disease?

A STUDENT: He had heart disease affecting the aortic valve, and syphilis is pretty likely to hit the aortic valve; he had positive Hinton and Wassermann tests; and that story about his rheumatism and rheumatic heart disease was not very definite.

ANOTHER STUDENT: He was too old to have rheumatic fever eleven years ago. He was thirty-seven years old.

DR. SMITH: That is not too old. But it is true that the older the patient the less likely the heart is to be damaged. The younger the patient with rheumatic fever the more likely that severe heart damage will result. Is there any other reason to make you think of syphilitic aortitis?

A STUDENT: The length of time is typical.

DR. SMITH: No; I should say that is not quite typical, because there is a story of three years' intermittent decompensation, and a good many syphilitic hearts do not last three years after they begin really to decompensate. When a syphilitic aortitis begins to give symptoms it usually progresses pretty quickly. If I saw that type of heart today I should be modest about giving anybody a probable prognosis of over two years. Three years is rather long for a history of frank decompensation as the result of syphilitic heart disease.

We have no proof of mitral involvement here, but that does not rule out rheumatic heart disease. Rheumatism might hit the aortic valve and no other, though that is not usual. His age is quite ideal for a syphilitic heart. We think of the rheumatic group in rather younger people and the arteriosclerotic and hypertensive group in older people. The age for syphilitic heart disease is apt to be the middle period of life. Do you think that could be arteriosclerotic? He has a blood pressure of 180.

A STUDENT: I do not see how it could be with all that history of syphilis and rheumatic fever. I do not see why we need to consider arteriosclerosis.

DR. SMITH: We have to consider everything in medicine. Would anybody consider arteriosclerotic heart disease? People have had arteriosclerotic heart disease and died at fifty. The blood pressure was 180/72. Would it not probably be a higher diastolic than 72 if the background were hypertension?

A STUDENT: Could he have aortic regurgitation on a basis of arteriosclerosis?

DR. SMITH: Yes, he could, but the history would not read like this one, and it would be a murmur you would probably have to listen for rather carefully, not a loud murmur heard all over the precordia.

Another thing, it is rather unusual for a rheumatic heart to fail with a regular pulse of 85 to 95. It may of course do so; but a rheumatic heart at that age would be very apt to be fibrillating and the heart rate apt to be higher.

A STUDENT: Could there be any kidney damage to go with the high non-protein nitrogen? He had Cheyne-Stokes breathing.

DR. SMITH: I do not think with the clear cardiac history and a non-protein nitrogen of only 52 we can say very much about the kidney. I certainly should not in this case. He may well have an arteriosclerotic kidney, but I doubt if he had real chronic nephritis.

On the whole I should agree with you from what we have here in the record that this man died of heart disease with congestive failure. His age, the fact that the only definite murmur they can tell us about was the murmur of aortic regurgitation, the fact that he had a big heart, Corrigan pulse, a wide pulse pressure; the facts that he had moderately positive Wassermann and Hinton tests and that he had this failure without fibrillation and a fairly slow heart would make me guess that he had a syphilitic heart and aorta. Do you think he had aneurysm? There is not the least thing here to suggest it. We have no X-ray examination. We should like an X-ray examination on this case. It would probably help a good deal in deciding the type of heart disease. I have seen cases enough that had syphilitic aortitis and had no aneurysm on physical examination but showed aneurysm post-mortem. I always keep it in the back of my mind that X-ray or post-mortem may show that the man had aneurysm too.

CLINICAL DIAGNOSES (FROM HOSPITAL RECORD)

Chronic cardiac valvular disease, with aortic regurgitation.
Congestive heart failure.

DR. WILLIAM D. SMITH'S DIAGNOSES

Syphilitic heart disease; syphilitic aortitis; aortic regurgitation.
Hypertrophy and dilatation of the heart.

ANATOMIC DIAGNOSES

Syphilitic heart disease; aortic insufficiency.
Syphilitic aortitis.
Subacute bacterial endocarditis.
Arteriosclerosis of the kidneys.

PATHOLOGIC DISCUSSION

BY TRACY B. MALLORY, M.D.

The main findings at autopsy are exactly what one would expect. There was a greatly enlarged heart weighing over 1100 grams, a marked aortic insufficiency, and scars on the aorta which, without much question, were luetic in origin. There was fairly well marked arteriosclerosis and some vascular change with shrinking in the kidney, but not enough to give any marked renal insufficiency, I am sure. One surprise is offered by the case,—there is no suggestion of it in the history,—a superimposed bacterial endocarditis. I think that is a rather unusual complication of syphilitic heart disease. It comes of course on top of a rheumatic lesion, but I have not seen it often in luetic hearts. Have you, Dr. Smith?

DR. SMITH: No. But I have seen a doubtful case in which there was either luetic heart disease or active bacterial endocarditis. The patient ran a prolonged temperature. We should always consider bacterial endocarditis in every case of death from heart disease. It is always possible in congenital, luetic, or any other type of heart disease.

A STUDENT: Did the liver show anything?

DR. MALLORY: It was entirely negative except for slight passive congestion.

A STUDENT: Do you think the bacterial endocarditis had anything to do with his death?

DR. MALLORY: There is no question but that it hastened his death, but I do not imagine it made a difference of more than months.

A STUDENT: Did you say it was acute or subacute?

DR. MALLORY: The process must have been present a number of weeks, possibly a month or more.

DR. SMITH: If you and I will remember that we always have to think of bacterial endocarditis in any case of death from heart disease we can take something away from this exercise.

NOTES ON THE TREATMENT

BY DR. SMITH

Cases of syphilitic heart disease represent a double therapeutic problem. In the first place they must receive treatment appropriate for whatever degree of decompensation they may have, and this treatment is the same as for any other type of cardiac failure. Second they should have treatment for the underlying syphilitic infection.

We have no notes on the treatment of this case, but I have no doubt that he was treated as an acute decompensated cardiac — digitalized, given morphia for rest, and if there was persistent edema possibly given some diuretic like salyrgan.

CASE 16152

SUDDEN COMA AND DEATH

MEDICAL DEPARTMENT

A Jewish salesman forty-five years old entered October 8, unconscious.

No history was obtained except that while he was walking with a friend in the park he suddenly became inarticulate and dropped unconscious. He remained in this condition until admission.

Clinical examination showed a man with stertorous breathing, occasionally vomiting and voiding urine involuntarily. There were occasional slight clonic contractions of the right

arm and leg, which felt spastic. The reflexes on this side were greater than on the left, although there was a generalized hyperreflexia. The left side was flaccid and without tone. No abdominal, cremasteric or plantar reflexes. No stiff neck. The pupils were fixed to light, regular, the right greater than the left. The heart, lungs and abdomen showed nothing unusual. Blood pressure 245/150. The penis showed marked scarring of the glans. Fundus examination with the pupils dilated with homatropin showed the disc margins very hazy, the vessels very much engorged, no retinal deposits, no hemorrhages seen, the entire fundus blurred, the vessel markings indistinct.

Temperature 98.2°, pulse 66, respirations 20.

Urine and blood not recorded. Wassermann negative.

The blood pressure rose to 280/160. Venesection was done and 350 cubic centimeters of blood withdrawn. Following this the blood pressure fell to 230/145.

The patient gradually failed, and died the morning of admission.

Clinical Discussion

BY WILLIAM B. BREED, M.D.

We have not very much to go on here except the rather dramatic onset. The history together with the physical findings certainly leads one to practically only one diagnosis, that is, massive cerebral hemorrhage. There are certain things here that can be commented upon. A massive hemorrhage of this sort is practically impossible to locate and I should not attempt to locate it. I think from the history and the appearance of the eye grounds, indicating increased intracranial pressure, and the persistent high blood pressure that it must have been a massive one. The fact that the pupils did not react to light is rather typical of this condition and in the absence of any other signs of central nervous infection does not always indicate tabes dorsalis. The statement that the penis showed scarring is not of much significance here, because we have nothing to indicate that this is luetic in origin or that he had central nervous system infection. The whole picture can be accounted for on the basis of massive cerebral hemorrhage. The absence of cremasterics and plantar reflexes is characteristic of massive hemorrhage. The confusion of the neurological findings is also confirmatory. It seems there is not much else to consider in differential diagnosis.

Does everyone agree more or less with the diagnosis?

A Student: Would you attempt to localize it as to the side of the cranium?

Dr. Breed: No, I would not, because of the confusion of the neurological findings.

Dr. Mallory: Would you like to guess?

Student: I would guess over the left motor area. His right side was affected.

Clinical diagnosis (from hospital record)

Cerebral hemorrhage.

Dr. William B. Breed's diagnosis

Massive cerebral hemorrhage.

Anatomic diagnoses

Cerebral hemorrhage, right.
Arteriosclerosis.
Hypertrophy of the heart.
Hypertension.
Vascular nephritis.

Pathologic Discussion

BY TRACY B. MALLORY, M.D.

The hemorrhage happens to have been on the right. It is very seldom possible in hemorrhage as acute as this to diagnose the location. There was hemorrhage in both ventricles, also some hemorrhage in the subarachnoid space. In that way a large number of areas may be involved at once and give such confusing signs that it is often impossible to locate the main site of hemorrhage. This was quite a big one in the parietal region close to the motor area. He had a quite marked degree of arteriosclerosis which was most evident in the cerebral arteries. It also showed up to a lesser extent in his kidneys, which weighed only 210 grams and had a narrow cortex, and unquestionably represent a vascular nephritis. No doubt he had a hypertension since his heart weighed 445 grams. I feel sure of that quite regardless of what his blood pressure may or may not have been when he came to the hospital.

Notes on the treatment, by Dr. Breed

You will note that venesection was done. In the presence of such an extensive cerebral lesion very little in the way of beneficial results could be expected. Morphia as necessary seems to me to be the only rational form of treatment in such cases.

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CEREBROSPINAL MENINGITIS

IN the one hundred and twenty-three years since cerebrospinal meningitis first swept, "like a flood of mighty waters, bringing along with it the horrors of a most dreadful plague", into the little town of Goshen, Connecticut, where Dr. Elisha North was in practice, many observers have noted the variable death-rate of the disease. In reading North's book, "A Treatise on a Malignant Epidemic, Commonly Called Spotted Fever, etc.", N. Y., 1811, which was the first publication on cerebrospinal meningitis, we are astounded at the success with which this Connecticut doctor attended his patients, for out of about two hundred, he lost only two. This record set by North has never been surpassed and certainly today a physician whose mortality rate is under 50 per cent. considers himself a most successful practitioner. In a series of cases treated at one of our metropolitan hospitals in the last few years, the death rate was about that figure. Prior to the introduction of serum, the mortality rates, in the country as a whole, were about 75 per cent. and during the World War it was not uncommon for a physician to lose one-half of his patients when the disease broke out in an army camp or hospital. On the other hand, during certain epidemics the mortality has been remarkably low and we presume that this must have been the case during the Connecticut epidemic of 1807-1811 described so vividly by North. That there is such a wide variation in the mortality of patients with this disease is one of the outstanding features of its epidemiology.

Recently in this country we have had epidemic outbursts in various places with an extremely high death rate. The disease was of the fulminating type, characterized by skin lesions and a free growth of meningococci in the blood stream. Death occurred in many patients within four to twenty-four hours after the onset of symptoms and no amount of treatment, either intravenously or intraspinally, seemed to check the disease. At the same time there have appeared cases with definite symptoms of meningitis and with organisms freely growing in the spinal fluid that have responded extraordinarily quickly to even single doses of anti-meningococcic serum. Two such cases recently appeared in one of our Boston hospitals, one entirely cured, after organisms had been found in the spinal fluid, by a single treatment of 15 c.c. of serum given into the subarachnoid space in the lumbar region. Another patient responded remarkably well after two or three treatments.

It has been thought that the type of serum used and the place where it was injected had a great deal to do with the overcoming of the infection. These factors are important, but do not, by any means, tell the whole story. Our standardization of sera, as recently pointed out by Dr. George W. McCoy, Director, Hygienic Laboratory, Public Health Service, is very unsatisfactory and the method employed to evaluate sera potency may or may not have any bearing on the clinical usefulness of the serum. In addition, he says, "About the best we can hope to do (with our present knowledge) is to see to it that animals are immunized with a sufficient variety of specific type strains to insure reasonably high serological titers for the generally recognized types of meningococci. We know from experience that such a serum will fail to meet the needs in some cases. The question has been raised as to whether it is possible to prepare a serum to meet the types prevailing in any given outbreak. The difficulties here are almost insuperable. It takes months to get horses sufficiently immunized to yield a satisfactory serum. By this time the epidemic may be on the wane or there may have been a shift in serological types."

The placing of the therapeutic agent closest to the point where organisms are growing freely is now considered to be of equal importance to selecting the most potent serum. Early in the disease serum should be given intravenously, for it is now usually considered that a meningococcemia of the blood stream precedes the

actual invasion of the meninges. The point of entrance of the organisms to the subarachnoid space is still open to question. There is some evidence pointing to the fact that they enter through the choroid plexus into the lateral ventricles and thus spread from that point. Based upon this presumption, early intraventricular treatment has been used successfully, especially in children. Another point of entrance now often used is the cisterna magna, punctured according to the method of Ayer.

It must be recognized, nevertheless, that there is some other factor in cerebrospinal meningitis which we cannot evaluate at the present time. Occasionally patients treated with the most potent serum according to the laboratory standardization and by the most approved methods, do not respond and die quickly. On the other hand, there are patients who are treated in an almost haphazard manner, who either have a very high immunity to the disease or are affected with an organism of little virulence, who respond remarkably quickly to single treatments. Let us not be over-hasty in blaming the serum if we should, by chance, have an epidemic of meningitis with a high mortality.

IN RETROSPECT

In 1914, shortly after the death of Dr. James G. Mumford of Boston, Dr. Malcolm Storer, a close friend, wrote a biographical notice in which he pointed out that Dr. Mumford was "a man before his time and essentially a reformer, not of the irritating, aggressive type to whom we surrender out of sheer boredom, but the quiet, persistent kind of man who sees clearly what he feels ought to be done and keeps his goal steadfastly in mind". It is interesting to look back, after nearly twenty years, and see what these goals were—for there were three of them—which Dr. Mumford steadfastly kept in mind, and to note what has happened in the intervening period.

The three things of which Dr. Mumford was firmly convinced all have their present-day aspects. One was that, in many cases, religion is quite as potent a remedial agent as is medicine. Dr. Mumford joined with great enthusiasm the so-called "Emmanuel Movement", the success of which has been by no means commensurate with the hopes Dr. Mumford had of it. On the other hand, the importance of faith in medicine has grown continually since Dr. Mumford's time, and although the medical profession has never accepted the religious point of view on an organized basis, the two have grown closer and closer together, as Dr. Mumford so clearly predicted. Science, including medicine, and theology were never more in accord than today.

Secondly, Mumford foresaw, as far back as 1906, that with the coming of great medical centers, such as the Harvard Medical School, there should be professors whose chief business it was to teach students. He saw that full-time professorships must soon be established, for it was impossible for the practitioners to have time enough or be well trained enough to teach medicine as it was bound to be taught in the future. Medicine was becoming too complicated even in its clinical branches and, although we are sure that Dr. Mumford would have protested very strongly against the complete exclusion of the part-time clinical men, the expansion of the full-time teaching system, now recognized as one of the great forward steps in medicine, was well established in his mind twenty-five years ago. We realize today that his foresight in this matter was excellent and that the tendency expressed in his ideas was the correct one.

The third, and probably the most profound, conviction of his life was one that has been even more fully realized than either of the other two. It was Dr. Mumford who saw that while the rich and the very poor are well cared for medically, no adequate provision, during his time, was made for the man with a slender purse who did not wish to be a "charity patient". To this end, from 1910 on, he devoted much of his thought and labor and even made plans for establishing a coöperative hospital for people of moderate means, of which he was to be the surgical head. This scheme got no further than its prospectus during Dr. Mumford's lifetime, although the idea was partly carried out by him when, in 1912, he became physician-in-chief to the Clifton Spring (New York) Sanitarium. There were reasons, largely differences of opinion in regard to policy, which led to his failure in New York, but death came so quickly after 1912 that perhaps it is unfair to consider that his work there was even well under way before he died.

The opening of the new Baker Memorial Hospital at the Massachusetts General Hospital is undoubtedly the result, at least in part, of the idea implanted in men's minds by Dr. Mumford, twenty years ago. His far vision was correct in this respect as it was in relation to the full-time teachers at the Medical School. It seems worthy to note at this time, when, in our constant activities we are likely to forget the past, the work of a man to whom Boston owes so much in medicine.

PHYTOPHARMACOLOGY

A past generation was familiar with a popular lecture entitled "Acres of Diamonds", in which the lecturer tried to bring home to his audiences the fact that great opportunities lie close at hand, and can be seized, if only we have eyes to see them.

A recent illustration of this thesis has been the creation one may almost say in the past decade, of phytopharmacology, as a special branch of experimental science, by Macht[1] and his collaborators. His method is of the utmost

simplicity in theory. It is to test the effect of soluble substances on the rate of growth of seedlings of Lupinus albus. The experiments can be controlled with considerable exactitude and a quantitative determination of "toxicity" can be made. The presence of "menotoxin" in the blood serum as well as in the saliva, sweat, milk, urine, tears and other secretions of menstruating women has been demonstrated.

The presence of a toxin in the blood in pernicious anemia and its absence in other anemias is a valuable confirmation of older views as to the "essential" nature of this disease. The persistence of the toxin under liver treatment in spite of improvement in symptoms, and its disappearance under certain types of heliotherapy, is a noteworthy fact brought out by Macht's method. Similar diminution of the toxin of leprosy under treatment with chaulmoogra oil is very suggestive. In eclampsia, a typical "toxemia", no toxic substance in the blood serum could be detected by phytopharmacological methods. These results suggest that the term toxic should always be used tentatively, that is with reservation, until experimental evidence indicates something of the limits of the poison.

The investigations indicate "that certain poisons, or toxins, which could not hitherto be detected by chemical, physical or by zoophysiological or zoopharmacological methods could be demonstrated by phytopharmacological means, and in general it has been the experience of Macht and his co-workers that poisons produced by plants, or phytogenic poisons, are more toxic for animals than for plants, while poisons elaborated or produced by animals or zoogenic poisons are commonly much more toxic for living plant protoplasm than for living animal tissues". An example that apparently is an exception to this rule, however, is found in snake venom, even more poisonous for living plant protoplasm than for animal protoplasm.

These studies are of intense practical interest in the limited field of medicine, but they concern intimately every field of biology, using the term in its most comprehensive sense, and suggest what we often forget, that there is a unity in life, the explication of which is the aim of the science which bears that name.

REFERENCE

1 Macht, David I.: Contributions to Phytopharmacology or The Applications of Plant Physiology to Medical Problems. Science, Vol. LXXI, No. 1838, p. 302, Mar. 21, 1930.

THIS WEEK'S ISSUE

CONTAINS articles by the following named authors:

HERMANN, OTTO J. A.B., M.D. Harvard 1910. F.A.C.S. Visiting Surgeon, Bone and Joint Service, Boston City Hospital. Instructor in Surgery, Harvard Medical School. His subject is: "Fracture of the Os Calcis". Page 705. Address: 520 Commonwealth Avenue, Boston.

SMITH, MILLARD. B.S., M.S., M.D. Harvard 1923. Assistant Professor of Medicine, University of Michigan Medical School. His subject is: "The Relation of Constitutional Inadequacy to Atrophic Arthritis". Page 712. Address: University Hospital, Ann Arbor, Michigan.

DENNY, FRANCIS P. A.B., M.D. Harvard 1895. Health Officer, Brookline Board of Health. His subject is: "Diphtheria Prevention in Brookline". Page 716. Address: Brookline Board of Health, Brookline, Mass.

LOMBARD, HERBERT L. A.B., M.P.H., M.D. Bowdoin 1915. Director, Division of Adult Hygiene, Massachusetts Department of Public Health. His subject is: "Annual Report of the Division of Adult Hygiene of the Massachusetts Department of Public Health". Page 719. Address: State House, Boston, Mass.

LANDRY, B. B. A.B., M.D. Harvard 1920. Assistant Surgeon, St. Francis and Municipal Hospitals. His subject is: "Appendicitis in Pregnancy". Page 722. Address: 30 Farmington Avenue, Hartford, Conn.

MCKITTRICK, LELAND S. B.S., M.D. Harvard 1918. F.A.C.S. Visiting Surgeon, Palmer Memorial Hospital and House of the Good Samaritan. Assistant Visiting Surgeon, New England Deaconess and Massachusetts General Hospitals. His subject is: "Malignant Disease of the Skin, I". Page 725. Address: 205 Beacon Street, Boston.

CHEEVER, AUSTIN W. A.B., M.D. Harvard 1914. Chief of Department of Skin and Syphilis, Boston Dispensary. Visiting Dermatologist, Beth Israel Hospital. Instructor in Dermatology and Syphilology, Harvard Medical School. His subject is: "Malignant Disease of the Skin, II". Page 726. Address: 472 Commonwealth Avenue, Boston.

FRIEDMAN, HARRY P. M.D. Vanderbilt University Medical School 1912. Roentgenologist, Boston Dispensary. Chief of the Cancer Clinic, Boston Dispensary. Attending Roentgenologist, Beth Israel Hospital. Consulting Radiologist, New England Hospital for Women and Children, Westboro State Hospital. His subject is: "Malignant Disease of the Skin, III". Page 727. Address: 270 Commonwealth Avenue, Boston.

GILE, JOHN F. A.B., M.D. Harvard 1920. F.A.C.S. Instructor in Physical Diagnosis, Dartmouth Medical School. Member of Surgical Staff, Mary Hitchcock Memorial Hospital, Hanover, N. H. His subject is: "Injection Treatment of Varicose Veins". Page 729. Address: Hanover, New Hampshire.

The Massachusetts Medical Society

SECTION OF OBSTETRICS AND GYNECOLOGY

Louis E. Phaneuf, M.D., *Chairman* — Alonzo K. Paine, M.D., *Secretary*

Frederick J. Lynch, M.D., *Clerk*

Endometriosis

Endometriosis is a disease which the general practitioner should know something about because the symptoms and signs are similar to those of pelvic inflammation and, as a result, many women have been suspected of having the latter, while their husbands have been stigmatized in the doctor's mind.

It is characterized by the ectopic growth of endometrial-like tissue, principally in the pelvis and especially in the ovaries. The fully developed tumor is a cyst lined with endometrium and containing menstrual blood, the lining menstruating each month into the cavity of the cyst, just as the lining of the uterus does. Such cysts in the ovary were supposed to be large follicular cysts or corpora lutea with an excessive hemorrhage into them up to 1921, when Sampson showed that there may be a wide distribution of similar growths, though of smaller size, over the peritoneum covering the pelvis, uterus, tubes, bladder, adjacent intestine, appendix, and even in hernia sacs. These are small, bluish elevations which contain blood and show endometrium microscopically.

There are four theories regarding the occurrence of these growths. First that they are implants from particles of endometrium in blood which flows back through the tubes during menstruation. Such a back flow has been definitely proved at operations and the contents of the blood determined microscopically. Further the commonest places for the cysts to occur is on the ovaries, back of the uterus, and peritoneum under the ends of the tubes. The uterus is often retroverted or contains fibroids, both of which would favor back flow. The second theory is that these areas are metastatic from the endometrium of the uterus through the lymphatics. Endometrium has been found in the lymphatics and it is well known that cancer of the fundus of the uterus metastasizes to the ovaries in a similar manner. The third theory is that the growths are due to embryonal rests from the Mullerian ducts in the ovaries. The fourth theory is that, as peritoneum is the tissue from which the ova are developed, it is reasonable to suppose that peritoneum may take on other forms of growth resulting, in this instance, in the formation of endometrium. It is sufficient to say, for this paper, that the first theory, with some instances of the second, are the generally accepted modes of distribution.

The essential facts of the progress of the disease are that when such a cyst forms in the ovary it increases in size until the intra-cystic pressure is great enough to cause it to rupture, when its contents are extruded into the pelvis where they cause intense irritation and formation of dense adhesions. Also the pieces of endometrium contained in that blood may become implanted on the various adjacent organs to form the many widely distributed endometriomata so often found if carefully searched for. The cyst then becomes adherent to the broad ligament, or some other organ, at the point of rupture and gradually fills again. This cycle may be repeated several times.

The cysts vary from being tiny in size up to six or more inches in diameter but average about three. They are found in both ovaries in thirty per cent. of the cases. The small implantations may occur on any of the organs adjacent to the pelvis and cause relatively little trouble, except those which occur in the posterior culde-sac growing into the wall of the rectum. There they may form tumors of a size which obstructs the rectum, even to the point of necessitating a colostomy. Other points in the pathology are that the tumors may change into adenocarcinoma just like the endometrium and may be the cause of some of the cyst-adenomata of the ovary.

The disease causes symptoms in women from thirty to fifty years old. The symptoms are like those of chronic pelvic inflammation, i.e., pain in the lower abdomen off and on, worse during menstruation, with occasional attacks of sharp pain when a cyst ruptures. The acute attacks must be differentiated from appendicitis, cyst with a twisted pedicle, ectopic pregnancy, pelvic inflammation, and stone in the ureter.

The examination usually shows an adherent retroversion, fibroids sometimes, tenderness, and masses on one or both sides of the pelvis. In other words it is typical of chronic pelvic inflammation. Therefore a history of gonorrhoeal or puerperal infection must be carefully sought. In the absence of this and signs, such as discharge from Bartholin's and Skene's glands, it is fair to make the diagnosis of endometriosis.

The treatment depends on the fact that the cysts and implants are influenced by the internal secretion of the ovary, just as the endometrium is, and will grow as long as there is ovarian function. Therefore to cure the disease absolutely when all the implants cannot be destroyed it is necessary to remove the ovaries or stop their function. Practically this is not essential. If the patient is a young woman who wants children, it is all right to leave as much ovarian tissue as one can and do a suspension of the uterus to prevent a recurrence of the retroversion. The chances are about one third that implants which may not have been removed will grow enough before the menopause to require another operation. However, if the patient wants no more children, is near forty, or the implants are invading the rectum then a hysterectomy with removal of all ovarian tissue

is advisable. If this is done all implants will atrophy.

Questions of a similar nature to the above will be discussed in the *Journal* each week. They may be addressed to the Clerk of the Committee in care of the *Journal* and will be answered by members of the Committee of the Section of Obstetrics and Gynecology.

THE MEDICAL LIBRARY AND MASSACHUSETTS MEDICAL SOCIETY FUND

You probably have some favorite charity for which provision is made in your budget. A yearly contribution to the Fund will be appreciated.

MISCELLANY

MEDICAL INSPECTION

Legislation and regulation with regard to the medical inspection of school children began in 1899 but was most active between 1910 and 1920, with minor changes in existent laws during that period and later. These laws present an astonishing variety as to details of requirements or permissions and are difficult to present in a simple classification. In all, 38 States have some kind of a statute or regulation (usually a statute) either permitting or requiring the examination of children for physical (and sometimes mental) defects. In addition, one State permits the establishment of dental clinics and in another State without a law there are local ordinances permitting medical inspection.

In 24 States the law is more or less mandatory in its wording for all school districts, and for certain districts in 3 other States. The State Board of Education is apparently responsible for carrying out the mandatory law in 11 States and is directly responsible in 8 of these. The State Department of Health is responsible for what is to be done in 11 and joint action is advised in 9. However, the "responsibility" especially of departments of health seldom includes more than the prescribing of examination forms.—*United States Department of the Interior, Office of Education.*

RESOLUTIONS ADOPTED BY THE BUTLER COUNTY MEDICAL SOCIETY, HAMILTON, OHIO

Dr. Mark Millikin, Pres.
Dr. P. E. Decatur, Sec'y.

1. *Whereas*, there have been introduced in Congress two bills by Representative Porter of Pennsylvania seeking to further restrict physicians in their use of narcotic drugs, and

2. *Whereas*, if these bills become laws, no physician, dentist or veterinarian may use narcotics unless licensed by a Washington bureau chief,

3. Therefore be it resolved that The Butler County Medical Society now in session go on record as condemning not only the bills but the spirit of distrust of those legalized guardians of health who must sometimes use narcotic drugs as amelioratives.

4. Be it further resolved that the passage of these bills will tend to increase bootlegging of narcotic drugs; and as such a hazardous business must be made unusually remunerative, the profit in it must come through the patronage of new and more addicts, and those physicians, who, having made even slight mistakes, are barred from ever again using narcotics.

5. Be it further resolved, that the members of this society condemn attempts at reforms by means of drastic, prohibitory laws; for the reason that such laws are not universally applicable.

6. Be it further resolved that the members of this society condemn the custom of giving part of the fines collected to the inspector, because it engenders the despicable methods of present-day prohibition officers.

7. Be it further resolved that copies of these resolutions be sent to Ohio's United States senators and representatives, and to *The Ohio State Medical Journal* and *The Journal of the American Medical Association*, and the newspapers of Hamilton and Middletown.

ACTIVITIES OF THE PUBLIC HEALTH SERVICE IN CONNECTION WITH CONTROL OF INTERSTATE SPREAD OF DISEASE

One of the matters relating to the control of the interstate spread of disease by the United States Public Health Service to which considerable attention has been devoted during the past few years is that of shellfish sanitation. The Public Health Service considers that the States which produce shellfish are primarily responsible for seeing that they are grown in suitable waters and handled in a sanitary manner. An agreement has therefore been made with the States whereby each State will limit the taking of shellfish to areas which are known to be safe, as judged by accepted standards, and will issue State certificates to dealers who derive their product from approved sources and handle them in accordance with approved methods. The Public Health Service officials aid the States in determining safe growing areas, devising standards for safe handling, and acquiring adequate facilities for the sanitary control of shellfish; and they endorse the certifications made by the States which are sufficiently well equipped and efficient to merit such endorsement. Lists of shellfish dealers who are endorsed both by the States and the Public Health Service are issued at frequent intervals during the shellfish season and distributed to public health officials throughout the country, in order that they may know from what sources to permit their local dealers to purchase shellfish. In case a State should issue certificates under conditions which make endorsement by the Public Health Service impossible, the health authorities of the consuming States would be informed as to the reasons why the endorsement of the Public Health Service was withheld, and if, in the light of that knowledge, they still desired to purchase shellfish from that State, they might do so. Such eventualities, however, have never arisen.—*United States Public Health Service.*

CORRESPONDENCE

PARKING OF PHYSICIANS' CARS

Editor, *New England Journal of Medicine.*
165 Newbury Street,
Boston, Mass.

Dear Sir:

Will you please allow space in the *Journal* for the letter attached hereto. Incidentally may I ask through the *Journal* why Boston physicians should not be accorded privileges at the hands of the Boston Police similar to the privileges accorded to physicians in New York City.

While courtesy prevails at the hands of the Boston Police, yet we do not officially enjoy the privileges that New York physicians do.

Yours very truly,
GAETANO PRAINO, M.D.

Police Department
City of New York

February 5, 1930.

Dr. Gaetano Praino,
273 Broadway,
Boston, Mass.

Dear Sir:

Your letter of February 1 requesting information regarding the parking of physicians' cars has been referred to me in the absence of the Police Commissioner.

Physicians are permitted to park their cars while actually attending patients. The various Medical Societies issue automobile emblems and identification cards to their members. Physicians not members of a Medical Society are given the same consideration by the Police Department as that accorded members of such a Society, upon presentation of proper means of identification.

Yours very truly,
PHILIP D. HOYT,
Acting Police Commissioner.

PETER BENT BRIGHAM HOSPITAL AND THE REFERRING PHYSICIAN

April 1, 1930.

The *New England Journal of Medicine.*

Dear Editor:—

The letter of Dr. William Frankman in the March 27 number of the *Journal* about the admirable methods of the Children's Hospital in reporting to physicians of patients leads me to state what is done by the medical service of the Peter Bent Brigham Hospital, since Dr. Frankman implies that the Children's Hospital alone in Boston is interested in keeping in touch with the physicians of referred patients.

When a patient is admitted to the medical wards of the Peter Bent Brigham Hospital at once a postcard is mailed to the referring physician worded as follows:

.....19

Dear Doctor:

M..... has been admitted to Ward ..... on the medical service of the Peter Bent Brigham Hospital. I would be glad to have you come to the Hospital to discuss this case with us. The medical visit is made daily beginning at 10 o'clock and we would be glad to have you join in this visit and see your case with us. If it is not convenient to come at this time, the house-officer ..... in charge of the ward will be glad to see you at any other time.

Very truly yours,
HENRY A. CHRISTIAN.

Many physicians promptly get into telephone communication with the house-officer named as in charge of their patients and give us valuable information about the patients and we in turn report our findings. Numerous physicians accept our invitation and call to talk over the case with the house-officer and some come at the time of ward visits to discuss their patients with the visiting physician-in-charge. Frequently telephone conversations and calls are repeated several or more times. Our only regret is that not every physician gets in touch with us.

When the patient is discharged, the patient is requested to report to his physician, and the visiting physician, who has been in charge of the patient while he was at the Peter Bent Brigham Hospital, writes a personal letter to the physician about his patient giving the important items in findings, diagnosis and treatment.

Approximateiy one year after the patient is discharged from the hospital, the physician is sent a letter asking for follow-up information about the patient to add to the hospital records. In this letter is a directed return-postcard, which, if he so prefers, the physician may mail to the patient, and the patient by answering the questions on the card gives the desired follow-up information. The hospital is continuously indebted to physicians for the trouble they are willing to take to furnish follow-up information of great value to us in our study of patients.

Yours truly,
HENRY A. CHRISTIAN.

ARTICLES ACCEPTED BY THE AMERICAN MEDICAL ASSOCIATION COUNCIL ON PHARMACY AND CHEMISTRY

535 North Dearborn Street, Chicago, Ill.
March 28, 1930.

Managing Editor,
The *New England Journal of Medicine:*

In addition to the articles enumerated in our letter of February 21, the following have been accepted:

Eli Lilly & Co.
- Merthiolate Jelly, Lilly
- Merthiolate Ointment, Lilly

E. R. Squibb & Sons
- Squibb's Dextro-Vitavose

Frederick Stearns & Co.
- Synephrin
  - Synephrin Solution "A"
  - Ampoules Synephrin-Procaine, 3 c.c.
  - Hypodermic Tablets Synephrin-Procaine

The following article has been exempted and in-

cluded with the List of Exempted Medicinal Articles (New and Nonofficial Remedies, 1929, p. 481):

G. D. Searle & Co.

Stable Solution Dextrose and Sodium Chloride (Searle)

Yours truly,
W. A. PUCKNER, *Secretary*,
Council on Pharmacy and Chemistry.

RECENT DEATH

PROCTER—DR. PERCY CLEMENT PROCTER, a Fellow of the Massachusetts Medical Society, died at his home in Gloucester, April 2, 1930, aged 62.

Dr. Procter, who had been handicapped from childhood by the results of an attack of anterior poliomyelitis, was the son of Charles and Louisa Pugh Procter of Gloucester, where he was born April 24, 1867. His education was received in private schools and at Harvard Medical School, taking his M.D. in 1894. He practised largely in the domain of eye, ear, nose and throat, being a member of the staff of the Addison Gilbert Hospital in Gloucester and at one time having an office in Boston. Among his memberships he included the American Board for Ophthalmic Examinations, the New England Ophthalmological Society and the New England Otological and Laryngological Society besides membership in the Pyrian Lodge, A. F. and A. M.

Dr. Procter had been twice married, his second wife, who survives him, having been Miss Bertha E. Blanchford.

NEWS ITEMS

HARVARD MEDICAL SCHOOL NEWS—The following resignations and fellowships were made public by the Dean's Office on April 4, 1930:

Resignations to take effect April 1, 1930:

Dr. Julius Goddard Kelley, Charles Follen Folsom Teaching Fellow in Hygiene.

Dr. James Leroy Wilson, Edward Hickling Bradford Fellow, who is now working in Pediatrics, is transferring to the Moseley Travelling Fellowship for the coming year (1930-31).

Fellowships for year 1930-31:

Charles Victor Seastone, Jr.—Austin Teaching Fellowship in Bacteriology.

Edward B. Benedict, M.D.—William O. Moseley, Jr., Travelling Fellowship.

Albert H. Bryan—George Cheyne Shattuck Memorial Fellowship.

David W. Gaiser—John Ware Memorial Fellowship.

Harry K. U. Beecher—James Jackson Cabot Fellowship.

Aaron Prigot—Charles Eliot Ware Memorial Fellowship.

William F. Queen—DeLamar Research Fellowship.

Jared Y. Garber—DeLamar Research Fellowship.

Lowell F. Bushnell—DeLamar Research Fellowship.

Benjamin F. Miller—DeLamar Research Fellowship.

Dr. Alfred C. Redfield, Assistant Professor of Physiology, has been granted leave of absence for the academic year 1930-31.

LOIS GRUNOW MEMORIAL FOUNDATION—The gift is announced of a million dollars from William C. Grunow for the establishment at Phoenix, Arizona, of a clinical laboratory in which to pursue scientific studies of disease and its alleviation. The laboratory is dedicated in memory of his daughter, who died last year.

NOTICES

AMERICAN ASSOCIATION FOR THE STUDY OF GOITER

Beginning this year the American Association for the Study of Goiter will award a cash prize of $300 annually for the best original thesis dealing with some phase of the goiter problem. Theses should be submitted by June 1, to Doctor Walter M. Simpson, Chairman of the Essay Committee, Miami Valley Hospital, Dayton, Ohio. The award will be given immediately following the coming meeting of the Association which is to be held in Seattle, Washington, July 10-12, 1930.

UNITED STATES CIVIL SERVICE EXAMINATIONS

The United States Civil Service Commission announces the following open competitive examinations:

Medical Officer
Associate Medical Officer
Assistant Medical Officer

Applications for the above-named positions will be rated as received by the Civil Service Commission at Washington, D. C., until June 30, 1930.

The examinations are to fill vacancies in hospitals of the Veterans' Bureau, the Public Health Service, the Indian Service, and in other establishments of the Federal classified service throughout the United States.

Competitors will not be required to report for examination at any place, but will be rated on their education, training, and experience.

Full information may be obtained from the United States Civil Service Commission at Washington, D. C., or the Secretary of the United States Civil Service Board of Examiners at the post office or customhouse in any city.

Examinations are announced in addition for the positions of Senior Medical Technician and Medical Technician in (a) Bacteriology, (b) Roentgenology, applications to be filed with the Civil Service Commission not later than May 7.

REPORTS AND NOTICES OF MEETINGS

CUTTER LECTURE ON PREVENTIVE MEDICINE

A Cutter Lecture on Preventive Medicine was delivered by William Mansfield Clark, Ph.D., Professor of Biological Chemistry at the Johns Hopkins Medi-

cal School, on April 1 and 2 at the Harvard Medical School. Dr. M. J. Rosenau presided and introduced the speaker. The title of the paper was "Reversible Oxidation-Reduction in Organic Systems".

The first lecture was on theory and methods. Professor Clark first separated the class of facts from past obscurity and then presented the data of today. Oxidation and reduction may be defined as the gain or loss of electrons. Oxidation may result from a gain in oxygen, a loss of hydrogen, or a loss of electrons. Professor Clark discussed the oxidation reactions of various systems, and showed the results obtained in the measurement of the energy changes, comparing electric potentials to hydrogen ion concentrations and showing how the oxidation potentials vary with different levels of hydrogen ion concentration. He also showed that energy measurements by electro-potential methods were consistent with thermodynamic laws.

The second lecture was on the biological applications of these reactions. Investigators have studied the oxidation-reduction reactions of hermidin, a pigment from plants, iconochrome, from sea urchins, and the hemoglobin-methemoglobin system, among many others. A study of the action of bacterial suspensions on certain dyes, many of which incidentally were synthesized by Professor Clark, along with electrometric titration, showed that dyes could be used to indicate levels of oxidation and reduction potentials. This change in potential depends on the change in bacterial metabolism. Intracellular potentials have been studied by injecting single cells with dyes by a microchemical method. It was found that reduction of positive indicators in the presence of oxygen took place, but that oxidation of pre-reduced materials also occurred. Investigators disagree on this point. On this basis it may be false to speak of the reduction potential of an aerobic cell.

Professor Clark theorized that in the process of photosynthesis oxygen is taken out, producing a tremendous reserve of reducing power which must later be released by catalysts. This catalyst is probably an iron compound, a porphyrin.

It was found that minute additions of iodine to bacterial cultures do not kill. Up to 160 c.c. of tenth normal iodine was added in one week to a peptone culture suspension without inhibiting the growth. Professor Clark concluded that cells thrive when the oxidation potential is in the neutral zone. He also found that anaerobes may be grown in the presence of oxygen if sufficiently active reducing substances are present in the culture medium.

Professor Clark pointed out the scope of this biological field which is bound up in all vital processes since, in spite of systemization of facts and advancement in technical methods, in reality but little advance has been made since the days of Pasteur.

HARVARD MEDICAL SOCIETY

The Harvard Medical Society held a meeting in the Peter Bent Brigham Hospital Amphitheatre on Tuesday evening, March 25, 1930 at 8:15 o'clock. After the presentation of cases Dr. Harvey Cushing introduced Dr. G. W. Corner, Professor of Anatomy at the University of Rochester School of Medicine, who spoke on "The Rise of Medicine at Salerno in the Twelfth Century".

The first case was presented by Dr. Harvey. The patient was a 42-year-old mason who had been perfectly well up to one year ago when he had several nosebleeds. There were no symptoms for the next six months. Then he developed numbness in the right hand which later cleared up. Three months before entry he had visual hallucinations and his vision began to fail. One morning he staggered when walking, had vertigo and vomiting. His doctor found headache behind the left eye, tinnitus in the right ear, and vertigo. He improved in a few weeks and an eye specialist saw some choking of the discs. The patient entered the hospital where physical examination showed a very large spleen and liver. His blood showed an anemia of slightly over two million and a white count of 736,000 with a high percentage of myelocytes. X-rays of the skull were negative. The positive neurological findings were numbness of the right hand, ataxia with a positive Romberg, low visual acuity, engorged fundi, a right facial palsy, and nerve deafness on both sides. The diagnosis was myelogenous leukemia.

The second patient to be presented was a 79-year-old seamstress who came in with the chief complaint of fainting spells. Her past history showed that she had had pneumonia, erysipelas, and sciatica, from all of which she had recovered. Several months before entry she had fallen downstairs and struck her head. She stayed in bed for three weeks and then went back to work. Three weeks before entry she had a fainting spell on the street with no noticeable sequelae. Since then she has had frequent fainting attacks coming on irregularly, unassociated with other symptoms. Physical examination showed a large heart with a rate of 40, and a systolic blood pressure of 220. EKG showed a complete heart block. She was digitalized and then given 30 mgms. of barium chloride three times a day. She had no attacks for three days, after which they reappeared. She was then given one-half cubic centimeter of adrenalin intramuscularly every three hours. The pulse rose and the electrocardiogram became normal. She had attacks with each change of rhythm. Medication was stopped for a week and then barium chloride was tried again with similar effects at first. The case was presented as one of heart block reacting to barium chloride and adrenalin therapy.

In his address Dr. Corner explained that medicine at Salerno is not distinctive because of its additions to knowledge, but because it was the only centre of medical learning at that time. Most of the medicine was founded on Arabic and Persian belief, and on the teachings of Galen and Hippocrates. After the Normans conquered southern Italy and made of it the kingdom of the two Sicilies, Salerno became a centre of culture to which many men flocked. Outstanding among the medical men was Constantinus, who after leaving Salerno lived in a monastery outside the city. He translated the medical writings of Haly Abbas, Isaac Judaeus, and the Arabic ver-

sions of Galen and Hippocrates. Stimulated thereby, other doctors began to write. Most of these books have been translated.

Anatomical description was simple and modeled after the teachings of Galen. Pigs were dissected as demonstrations. Medicine was based on the four humours, and diagnoses depended on pain, fever, the pulse, and the condition of the urine. Eighteen different kinds of urine were described, ten different pulses, and three kinds of fever. Treatment of diseases was designed to restore the balance of the humours either by increasing them through diet or decreasing them by eliminating measures. Many drugs and decoctums were used, these being mainly obtained from the Arabians. Diet was based on the supposition that foods either caused heat or coldness, and were either moist or dry. Thus these qualities affected the humours. The outstanding surgeon of the day was Roger, who practiced according to Greek and Arabic technics. Women practiced obstetrics and gynecology almost entirely.

Dr. Corner showed in his interesting talk that the doctors of that time were quite like those of today with their troubles and worries. Their place in history is that of being the translators and preservers of medical work.

JOINT MEETING OF THE GREATER BOSTON MEDICAL SOCIETY AND BETH ISRAEL HOSPITAL

The last regular meeting of the Greater Boston Medical Society and Beth Israel Hospital was held on Tuesday, April 1, 1930, at 8:15 o'clock at the Beth Israel Hospital. Dr. Harry C. Solomon introduced Dr. Henry A. Christian, who spoke on "Diuretics and Their Uses".

Dr. Christian defined a diuretic as any means or measure which will increase the output of urine or any constituent thereof. For practical purposes the total amount of urine is taken as a measure of diuresis.

There are two theories as to how a given diuretic acts. The first is that the diuretic brings about changes in the body fluids and solids, especially the electrolytes, thus disturbing the osmotic relationship so as to increase flow of water into the circulating blood, and as a result, more urine is excreted. The other theory is that the diuretic has a direct effect on the kidney increasing its function. The latter theory seems to fit clinical observations and emphasizes the probability that the kidney works harder than before the administration of the diuretic.

Diuretics are indicated in three conditions. In the first, they are used to rid the body of toxic substances such as accumulate in infectious diseases. The best diuretic here is water or other fluid. Its efficacy depends on the fact that up to the late stages in these diseases the circulation is functionally adequate and the kidney is not damaged. Potassium acetate or citrate and cream of tartar water in connection with an increased fluid intake have a mild diuretic action and are useful in certain cases though not much used at present. If there is circulatory stasis in the kidney, there is little to gain from the use of diuretics.

The second condition in which diuretics are indicated is in the attempt to rid the body of toxic substances accumulated by reason of poor kidney function. Dr. Christian pointed out that rarely does one find edema and these retention products in the blood in the same patient. In order to find this there must be two causes, renal inefficiency and cardiac insufficiency. In the presence of a damaged kidney extra strain thrown upon it is definitely detrimental. In animals with experimental uranium nephritis any diuretic including excess fluid intake will shorten life. A decreased fluid intake was also found to be detrimental. Thus, the correct fluid intake is essential. In some cases the guarded use of the milder diuretics helps. In these cases other avenues of removing toxins can be utilized. Thus, at the appropriate time, venesection, catharsis, and diaphoresis are valuable measures.

The third condition requiring diuretics is where excess water has accumulated and is interfering with body function. The causes of this edema may be listed as anemic, nutritional, renal, hepatic, and cardiac. In anemic edema an increased total plasma protein and reversed albumen-globulin ratio is found in the edemic stage. The edema disappears when the correct ratio is restored, due to adequate treatment of the anemia. Nutritional edema may be caused by pure starvation, or the deficiency of some one particular thing as in the wet form of beriberi. Here the edema clears up with an adequate diet. Edema of renal origin is much more difficult to treat due to the damaged kidney. A high protein diet, if tolerated, should be given. Curiously enough, the mercurial diuretics cause the better diuresis and cause less further damage than other kinds. Of them salyrgan and novasurol are best. Xanthine derivatives are usually not very effective.

For hepatic edema not much can be done by treating the cause except perhaps in luetic cirrhosis. Diuretics may control the situation, but usually are only useful to prolong the periods between the mechanical removal of the accumulated ascitic fluid. Here again the mercurial diuretics are the best.

Circulatory edema is best treated by the timely and judicious use of digitalis. It must be remembered that neither digitalis nor diuretics usually have any effect on pleural effusions. Here the procedure is thoracentesis when the respiration becomes embarrassed. Later on, when the patient is digitalized and the edema still continues, diuretics are useful. The xanthine derivatives often are effective and have the advantage that they can be given by mouth and if necessary by rectum. The ideal method is to give the diuretic in three doses before noon and repeat after 24-48 hours. Novasurol and salyrgan are very effective, but must be given intravenously or intramuscularly, and need to be preceded for several days by ammonium chloride or ammonium nitrate.

It cannot be foretold to which diuretic the patient will react. They should all be tried until the one is found which will cause a good diuresis. The mercurial diuretics are in vogue now, and must be

preceded by appropriate dosage of ammonium chloride. The main mistake is to give too much of the diuretic. Dr. Christian said that the new bismuth diuretic has been found not to be very satisfactory and caused much gastric upset.

The meeting was well attended and the paper of great practical value.

MASSACHUSETTS MEMORIAL HOSPITALS

Staff Meeting

The regular meeting of the Staff of the Massachusetts Memorial Hospitals was held in the Evans Memorial on Friday, March twenty-five. The Canti film, a moving picture depicting cell growth and the effects of radiation on malignant tissue, was shown.

Dr. Charles F. Branch read a paper on

THE DIAGNOSIS AND PROGNOSIS OF TUMORS

The paper emphasized the fact that the prognosis of many neoplasms depended largely upon early, accurate diagnosis followed by the proper treatment for tumors of that particular type and grade. The contribution of the histopathologist to this end is his attempt to grade tumors, thereby offering a prognosis based upon the histological variations in the individual tumor. Thus, grade I tumors in general represent the most slowly growing group while grade IV tumors represent the most rapidly growing class. This grading in a given case is accomplished by the proper evaluation of some twenty different points, among which are the more commonly understood ones such as mitotic figures, atypical or otherwise; variations in size, shape and staining reaction of the tumor cells or their nuclei; degree of differentiation and manner of growth of the cells and a consideration of the supporting stroma from several angles.

The speaker recalled some of the points more commonly overlooked regarding the general treatment of tumors. He called to attention the fact that the more slowly growing a tumor,—the more highly differentiated its cells are,—the more radioresistant it is, while the more rapidly it is growing the more radiosensitive it becomes. More consideration should be given the natural history of new growths. Certain classes of malignant and potentially malignant tumors exist for years, growing slowly, if at all. Many of these after interference of any nature become rapidly growing and destructive.

Colored lantern slides were shown of many of the tumors more commonly encountered. A brief description of the gross characteristics of the tumors in situ was given followed by a note on its clinical progress, probable prognosis and varying forms of treatment, emphasis being laid on the treatment of choice. The results obtained in similar cases under specific forms of treatment in the larger cancer clinics of the country were outlined. In conclusion, the speaker pointed out that the attempts of the pathologist to grade tumors for the purpose of prognosis is fundamentally sound in spite of the obvious criticism that the methods in general use and the results obtained are not one hundred per cent. perfect. He suggested that the greatest need at present is a much closer coöperation between the surgeon, the radiologist and the pathologist. In any given case, the combined special knowledge of these three individuals concomitant with a thorough review of the natural history of the case in particular, should lead to more accurate diagnosis and prognosis.

CLINICAL AND SURGICAL ASSOCIATION OF MASSACHUSETTS

The Clinical and Surgical Association of Massachusetts will hold its spring congress in New York City on May 8. Dr. Fred H. Albee has arranged a clinic at the Post Graduate Hospital for the Association on that day.

S. Chase Tucker, *Secretary.*

MASSACHUSETTS GENERAL HOSPITAL

A Clinical Meeting of the Staff of the Massachusetts General Hospital, will be held in the Moseley Memorial Building on Thursday, April 17, 1930, at 8:15 P. M.

PROGRAM

1. An Unusual Surgical Problem.
2. An Interesting Medical Case.
3. Unusual Manifestations of Rheumatic Disease —Dr. Robert F. Loeb, New York City.

Physicians, Medical Students and Nurses are cordially invited to attend.

Committee on Hospital Meetings.

PROGRAM OF THE SECOND MEETING OF THE NEW ENGLAND OBSTETRICAL AND GYNECOLOGICAL SOCIETY AT PROVIDENCE, R. I., APRIL 30, 1930

Morning Program

Rhode Island Hospital

9-10 Inspection of hospital.

10:00 Operative Clinic—Dr. I. H. Noyes and staff.

Insertion of radium needles in Cancer of Cervix—Drs. Pitts and Waterman.

11:30 Benign Tumor containing endometrium—Dr. Clarke.

Treatment of Cancer of Cervix at Rhode Island Hospital 1921-1924 with report of 5-year results—Dr. Waterman.

Diverticulum of Female Urethra with report of two cases—Dr. Pitts.

12:30 Luncheon at the Hospital.

Lying-in Hospital

9-10 Inspection of hospital.

10:00 The Aims, Organization and Work of an obstetrical Hospital not affiliated with a Medical School.

1. Business Administration. Costs, receipts, charges to patients, nursing staff, admission of patients, etc.—Dr. Harmon B. Jordan.
2. Function, Aims and Organization—Dr. E. S. Brackett.
3. Out-Patient Department Organization, Aims and Work—Dr. Alfred L. Potter.
4. The Heart Clinic—Dr. Frank T. Fulton.

5. The Tuberculosis Clinic—Dr. John I. Pinckney.
6. The Eye Clinic—Drs. J. W. Leech, H. C. Messinger, R. F. Hacking.
7. Ward and Delivery Room technique. Movies—Dr. Paul Appleton.
8. Pediatric Department. Care of newborn, premature Infants. Movies of technique of immediate postpartum care of full term and premature babies—Dr. H. E. Utter.
9. Autopsies on the Newborn with movies of the technique—Dr. Maurice Adelman.
10. Combined caudal, local and nitrous-oxid oxygen anesthesia. Movies of anatomy and technique—Dr. Wilfred Pickles.

12:30 Luncheon at the Hospital.

AFTERNOON PROGRAM

Providence Lying-in Hospital

2-3:30 Ward work.
Eclampsia—Dr. Noyes.
Placenta Praevia—Dr. Walsh.
Dry Clinics and Case Reports—Drs. E. S. Brackett, John W. Sweeney, B. H. Buxton, Charles MacDonald.

Providence City Hospital for Contagious Diseases

2:00 The City Hospital was one of the first hospitals in America to adopt and perfect a system of "Medical Asepsis" which makes it possible to treat in the same ward with no increase in cross infections, more than one kind of communicable disease. The City Hospital technique is a model one for an obstetrical hospital, especially in an isolation ward. Dr. Richardson will demonstrate the technique. The hospital will be open for inspection.

4:00 Rhode Island Medical Library.
Business Meeting.

6:30 Assembly at Squantum.

7:00 Dinner.

NEW ENGLAND PHYSICAL THERAPY SOCIETY

The April meeting of the New England Physical Therapy Society will take the form of a three-day convention, April 16-17-18, at the Copley-Plaza Hotel, with the American Physical Therapy Association as guests.

The program is replete and eminently practical. There will be much to be learned from the exhibits both commercial and scientific. The latter is an innovation which the committee hopes to make interesting and instructive. Much interesting material has been received, including Alvarez motion reels on visceral peristalsis and on other subjects.

The Banquet on Thursday evening will be enlivened by notable speakers, among whom will be Dr. Robert B. Greenough, Rev. John Nichol Mark, Dr. William L. Clark of Philadelphia and many others. Dr. DeWitt G. Wilcox will be Toastmaster.

All members of the State Medical Societies and others interested in the use of physical methods in the treatment of disease are cordially invited.

NEW ENGLAND WOMEN'S MEDICAL SOCIETY

The New England Women's Medical Society is holding its quarterly meeting at the Hotel Vendome on Thursday evening, April 17, 1930.

The speakers of the evening will be: Dr. Gladys H. Dick of Chicago, Dr. Timothy Leary, Dr. Edwin H. Place.

Epsilon chapter of Zeta Phi, Nu chapter and Iota chapter of Nu Sigma Phi, and the undergraduate medical women are invited to this meeting.

Dinner at 6.45 P. M.

Guests cordially invited.

E. V. O'NEILL, M.D., *Secretary.*

MIDDLESEX SOUTH DISTRICT MEDICAL SOCIETY

The annual meeting of the Middlesex South District Medical Society to be held at the Commander Hotel, Cambridge, has been postponed to Wednesday, April 23, to avoid conflicting with the New England Health Institute.

PROGRAM

11:30 A. M. Business meeting.

12:00 N. Some Aspects of the Modern Practice of Medicine, Dr. Charles E. Mongan.

1:00 P. M. Dinner.

ALEXANDER A. LEVI, M.D., *Secretary.*

SOCIETY MEETINGS, CONGRESSES AND CONFERENCES

1929-1930—Massachusetts Dietetic Association. Complete schedule appears on page 852, issue of October 24, 1929.

March-October — International Medical Postgraduate Courses in Berlin. Complete notice appears on page 853, issue of October 24, 1929.

April 10—New England Society of Psychiatry. Detailed notice appears on page 703, issue of April 3.

April 14-18—New England Health Institute. Complete notices appear on page 55, issue of January 2, and on page 703, issue of April 3.

April 16-18—Third Physical Therapy Convention. Detailed notice appears elsewhere on this page under heading New England Physical Therapy Society.

April 17—New England Women's Medical Society. Detailed notice appears above.

April 17—Massachusetts General Hospital. Complete notice appears on page 745.

April 22—The Greater Boston Medical Society. Detailed notice appears on page 702, issue of April 3.

April 30—New England Obstetrical and Gynecological Society. Complete notice appears on page 745.

May 2—Annual Meeting of the American Society of Stomatologists. Detailed notice appears on page 92, issue of January 9.

May 5-10—First International Congress on Mental Hygiene. Detailed notice appears on page 93, issue of January 9.

May 8—Clinical and Surgical Association of Massachusetts. Complete notice appears on page 745.

September 4-8—Fifth International Congress on Physiotherapy. Complete notice appears on page 906, issue of October 31, 1929.

October 27—The American Public Health Association. Detailed notice appears on page 1271, issue of December 19, 1929.

DISTRICT MEDICAL SOCIETIES

Essex North District Medical Society

May 1—Thursday—Censors' meeting at Hotel Bartlett, 95 Main Street, Haverhill, (Telephone 3430) at 2 P. M. sharp. Candidates should present their diplomas to the Secretary one week in advance.

May 14—Wednesday—Annual Meeting, at Anna Jaques Hospital, Highland Avenue, Newburyport, Mass., at 12 noon. Subject, "Infective Foci: Sense or Nonsence". There will be talks and discussions on the subject from individual points of view, by seven physicians engaged in nine of the specialties of medicine, and from the dental standpoint.

Thursday, May 1, 1930—Censors meet for Examination of Candidates at Salem Hospital at 3:30 P. M.

J. FORREST BURNHAM, M.D., Secretary.

Essex South District Medical Society

Tuesday, May 13, 1930—Annual Meeting. The Tavern, Gloucester. Speaker: Dr. C. Macfie Campbell, Director of Boston Psychopathic Hospital. Subject to be announced later. Ladies invited. Dancing.

R. E. STONE, M.D., Secretary.

Franklin District Medical Society

The next meeting of the Franklin District Medical Society will be held at the Weldon Hotel, Greenfield, Mass., on the second Tuesday of May, at 11 A. M.

CHARLES MOLINE, M.D., Secretary.

Hampshire District Medical Society

The Annual Meeting will be held in May.

LUTHER O. WHITMAN, M.D., Secretary.

Middlesex East District Medical Society

May 13—At Unicorn County Club, Stoneham.

ALLAN R. CUNNINGHAM, M.D., Secretary.

Middlesex South District Medical Society

April 23, 1930—Annual Meeting. Commander Hotel, Cambridge. Note change of date. Detailed notice appears on page 746.

May, 1930—Censors' meeting.

ALEXANDER A. LEVI, M.D., Secretary.

Norfolk District Medical Society

May 1, 1930—The Censors meet for the examination of candidates, in the Roxbury Masonic Temple, 171 Warren Street, Roxbury, at 4:00 P. M.

Applications must be in the hands of the Secretary at least one week previous to date of examination.

May 6, 1930—Annual Meeting. Program to be announced.

Owing to inability to engage the Roxbury Masonic Apartments on the last Tuesday of the month, such meetings as will be held in the Roxbury Temple will be held Monday evenings as per the dates above.

FRANK S. CRUICKSHANK, M.D., Secretary.

Plymouth District Medical Society

April 17, 1930—Annual Meeting, Commercial Club, Brockton, 7 P. M. Election of officers. Annual oration, Dr. Frederick F. Weiner, "The Management of Prostatic Diseases", with moving pictures.

G. A. MOORE, M.D., Secretary.

BOOK REVIEWS

Synopsis of the Practice of Preventive Medicine. Cambridge, Harvard University Press, 1929.

This little book is published under the auspices of the Medical School of Harvard University, with a foreword by the Dean. It consists of 194 pages, alternate pages being left blank for criticism and correction. The subject is divided into twenty chapters, corresponding roughly to the departments of the modern medical school. This method of approach to this subject has been fairly successfully accomplished by other recent volumes. It is interesting, if well done, but necessitates considerable repetition. It is, perhaps, worthwhile to emphasize the preventive point of view in all the fundamental departments, but whether details should be emphasized may be questioned. Certainly to consider preventive medicine in relation to anatomy seems to strain this point to its utmost, and in the first chapter, this is well demonstrated in that all the comments in relation to anatomy really refer to one or another of the clinical departments. The following paragraph presents excerpts selected to show the make-up of the book and to illustrate the general criticisms.

On page four, it is suggested that the importance of correct approximation of tendons severed by injury should be stressed. In another paragraph, the old idea of the association of "ptosis" and constipation is stressed. On the following page, varicose veins are considered and the physiology of infection is discussed. The foregoing are found in the chapter entitled "Anatomy". The chapter on "Physiology" is apparently written with the teacher in view, and considerable space is given to the treatment of carbon monoxide poisoning. The second paragraph of the chapter on "Pathology", deals essentially with accident prevention, and the third paragraph mentions the value of débridement of wounds. In this section, a confusing statement as to the relationship of arteriosclerosis and hypertension is made and on page 15, it is suggested that "the value of digitalization in preventing chronic passive congestion and general anasarca may be touched on". The increase in surgical risk in the jaundiced patient seems hardly a topic either of prophylaxis or preventive medicine. On page 17, only three lines are given to the prophylaxis of goitre. In the chapter called "Bacteriology", the subject of sterilization is given three or four pages, with a careful discussion of the phenol coefficient which is available in all texts as part of the technique of the subject. A clinical discussion of the symptomatology of staphylococcus, streptococcus, pneumococcus infections follows with similar treatment of influenza, whooping cough and other common infections. On page 54, it is stated that acute poliomyelitis and encephalitis lethargica are closely related, and from the paragraph, it is difficult to determine whether he considers the virus of the two diseases identical or not. The chapter on "Parasitology" is evidently a suggestion to teachers. The chapter on "Pharmacology" is primarily concerned with the cure of disease and contains advice to the laity in relation to patent medicines and to the physician as to the use of proprietary preparations. The following chapter of three pages is devoted to the discussion of the value of physical examinations—not health examinations which are given less space elsewhere. The eighth chapter concerns the Department of Medicine. Diseases are divided into infectious diseases and degenerative diseases. The second section is entitled the "Cardio Renal Diseases", in which are included arteriosclerosis, nephritis and heart disease. The third section is entitled "The Degenerative Diseases", and includes malignant disease, diseases of the blood, metabolic diseases, deficiency diseases and occupational diseases. A section is devoted to "General Prophylactic Measures" taking up periodic examinations and life insurance examinations. Under "Surgery", there is a discussion of surgical technique as a preventive of infection, and of the proper choice of anaesthesia and preliminary medication. The latter, particularly, seems to be preventive only in the very broadest sense of the term. Much space is given to the discussion of "Anaesthetics", which seems to

belong in a textbook of surgery, rather than in preventive medicine. To Traumatic and Industrial Surgery, the provision of safety appliances and working conditions, in regard to light and space, and other methods of preventing accidents, is given considerable space. It should be noted that accident prevention is given prominence elsewhere. Chapter 10 is concerned with "Pediatrics" and in the introductory paragraph it is stated that "the whole field of nutrition is really within the bounds of preventive medicine". Of the remaining chapters devoted to the specialties, it is particularly desirable to point to chapter 12, "Psychiatry", which shows a misconception of the mental hygiene movement, and the advances made by this movement in the prevention and cure of functional symptoms. The hereditary bogey in relation to mental disease is again brought to the fore, with a disregard of the importance of the modern qualifications affecting this doctrine. The definite suggestion to sterilize the feebleminded and to permit annulment of marriage for insanity is brought forward.

Without going into further detail, the foregoing gives an idea of the contents of the book, and shows that it is not clear whether this booklet is written as a manual for teachers, for medical students, or for the laity. As one glances at the above topics, it is evident that in various portions it has been written with all three in mind. The style is frequently reminiscent of the popular newspaper article on medicine. In each section comparatively advanced clinical entities are dealt with instead of emphasizing the consideration of what have been called preclinical conditions. In spots, the book simply reverts to the status of the popular medical manual of symptoms. The so-called "preventive point of view" is conspicuously absent and rehash of textbook material should be eliminated.

The entire book should be recast and the detailed nature of this review is justified only to indicate the tremendous disappointment that the reader experiences in view of the auspices under which the book is published.

The Bacteriophage and Its Clinical Applications. By F. D'HERELLE, Professor of Bacteriology, Yale University School of Medicine. Translated by George H. Smith. Published by Charles C. Thomas, Springfield, Illinois, and Baltimore, Maryland, 1930. Pp. 254. Price $4.00.

This, the fourth of d'Herelle's books on the subject of bacteriophage, is apparently based on the Lane Lectures which he delivered at Stanford University in October, 1928. It is designed to present the facts and theories about bacteriophage in a form "understandable to all intelligent persons"; and the author succeeds reasonably well. The whole field of bacteriophage research is surveyed, not merely the clinical applications of this agent.

Even though there were no other reason for recommending this book, its perusal might well be urged in the hope that it would stimulate more study of bacteriophage by American investigators. Although only a few references are given, it is evident that relatively little research in bacteriophage has been carried on in the United States.

The volume is convenient in size, the printing good and the style pleasing.

Hypertension and Nephritis. By ARTHUR M. FISHBURG. Lea & Febiger, 1930. Price, $6.50.

This monograph is a well documented work on the modern concepts of these most important diseases. His conclusions are clear and well drawn, and his discussion of nephrosis satisfactorily restrained. The book is attractively bound and satisfactorily illustrated, and is a valuable summary of the present day ideas on these subjects.

BOOKS RECEIVED FOR REVIEW

The Bellevue Hospital Nomenclature of Diseases and Conditions. Revised by the Committee on Clinical Records. Approved by Dr. William Schroeder Jr. Commissioner. 1929. Published by Paul B. Hoeber Inc. 232 Pages. Price $3.00.

The Baby's First Two Years by Dr. Richard M. Smith. Fifteenth Printing. Published by Houghton Mifflin Company. 159 Pages. Price $1.75.

Die Chirurgie by Prof. Dr. M. Kirschner and Prof. Dr. O. Nordmann. Lieferung 26. Published by Urban & Schwarzenberg.

The Psychology of Childhood by Edgar James Swift. Published by D. Appleton and Company. 431 Pages. Price $3.00.

The Bacteriophage and Its Clinical Applications by F. D'Herelle. Translated by George H. Smith. Published by Charles C. Thomas Publisher. 254 Pages. Price $4.00.

Nasal Catarrh by W. Stuart-Low. Published by H. K. Lewis and Company Ltd. 84 Pages. Price 5/- net.

Procedure in Examination of the Lungs by Arthur F. Kraetzer. Published by Oxford University Press. 125 Pages. Price $2.00.

A Text-Book of Psychiatry by D. K. Henderson and R. D. Gillespie. Second Edition. Published by Humphrey Milford, Oxford University Press. 526 Pages. Price $5.50.

The Surgical Clinics of North America, February, 1930. Volume 10 Number 1. Mayo Clinic Number. Published by W. B. Saunders Company. 174 Pages. Paper $12.00 per clinic year. Issued serially, one number every other month.

La Colite Muco-Membraneuse by M. Chiray and R. Stieffel. Published by Masson et Cie, Éditeurs. 102 Pages. Price 12 fr.

La Rachianesthesie by Emile Forgue and Antoine Basset. Published by Masson et Cie, Éditeurs. 222 Pages. Price 30 fr.

The Treatment of Skin Diseases in Detail by Noxon Toomey. Published by the Lister Medical Press. 512 Pages. Price $7.50.

Cancer of the Breast by William Crawford White. Published by Harper & Brothers Publishers. 221 Pages. Price $3.00.